The Rose Family of British Columbia

30

by T.M.C. Taylor

WITHDRAWN

British Columbia Provincial Museum

Victoria Canada

LITHOGRAPHED IN CANADA BY E. S. MACDONALD, QUEEN'S PRINTER, VICTORIA, BRITISH COLUMBIA

BRITISH COLUMBIA PROVINCIAL MUSEUM
DEPARTMENT OF RECREATION AND CONSERVATION
HON. R. A. WILLIAMS, Minister LLOYD BROOKS, Deputy Minister

HANDBOOK No. 30

The Rose Family
(Rosaceæ)
of British Columbia

By T. M. C. Taylor
Illustrations by R. A. With

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1973

104-04

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BRITISH COLUMBIA
DISTRIBUTION MAP
BRITISH COLUMBIA PROVINCIAL MUSEUM
Scale of Miles
0 50 100 200
132°
128°
124°
120°
116°
60°
58°
56°
54°
52°
50°
150°
126°
122°
118°
114°
ATLIN
TELEGRAPH CREEK
Cassiar District
Rocky Mountains
Peace River District
ALASKA
PRINCE RUPERT
QUEEN CHARLOTTE ISLANDS
HECATE STRAIT
QUEEN CHARLOTTE SOUND
PRINCE GEORGE
KAMLOOPS
Cariboo
Kootenay District
VANCOUVER
NANAIMO
VANCOUVER ISLAND
VICTORIA
PACIFIC OCEAN

THE ROSE FAMILY (Rosaceæ) OF BRITISH COLUMBIA

INTRODUCTION

The rose family (*Rosaceæ*) is a large one of over 1,000 genera and about 3,000 species. Its members are distributed pretty much over all the earth, from frigid regions to the tropics. They are especially numerous in eastern Asia, North America, and Europe; in British Columbia and the Pacific Coast states nearly 40 genera occur, two-thirds of them in British Columbia.

The family is frequently divided into half a dozen subfamilies, most of which have been treated as families at some time in the past. Most botanists are now agreed, however, that this practice is not warranted and that despite the apparent diversity the *Rosaceæ* is a more natural grouping than that found in some of the other large families. Its members are characterized by the development of stipules, by the parts of the flower (except for the pistil) generally being in fives, the presence of a hypanthium in most genera (being adnate to the ovary when this is inferior), and the virtual absence of endosperm. Within the rose family are found trees and shrubs (often thorny and spiny) as well as herbs. The flowers may be borne singly or in a great variety of inflorescences and are radially symmetrical in our genera. The perianth varies to the extent that while it is commonly in two series one or both may be absent. The greatest diversity, however, is found in the pistil and subsequent fruit. The carpels may vary in number and be free or fused, the ovary inferior or perigynous. The fruit may be dehiscent or indehiscent, dry or fleshy; it may be an aggregation of fruitlets as in the raspberry (*Rubus*) or have other parts of the flower associated with it as in the strawberry (*Fragaria*) and the rose (*Rosa*). The accompanying plates show some of these floral and fruit types. (Fig. 1, 2.)

The account of the *Rose* family that follows is based on such monographic researches as are available, these are noted where

applicable in the text. In addition, the author has drawn freely on a number of outstanding works that deal with areas immediately adjacent to this Province. The most helpful of these is the five-volume work edited by Prof. C. L. Hitchcock, of the Department of Botany, University of Washington. The *Vascular Plants of the Pacific Northwest* is outstanding for its descriptions, the clarity of the drawings, the listing of synonyms, and the taxonomic notes. Botanists in the Pacific Northwest are greatly indebted to Professor Hitchcock for making all this information available to us.

A work that has been an invaluable reference for our northern species is Hultén's *Flora of Alaska and Neighboring Territories.* The appearance of the definitive *Flora of the Queen Charlotte Islands, Part 1* (Calder, J. A., and R. L. Taylor) gives us detailed information on the vascular flora of this interesting region.

A glossary is provided to assist the understanding of those not too familiar with the meaning of technical words. It is based on Featherly's *Taxonomic Terminology of the Higher Plants* (Hafner Publ. Co., 1968). At the end of the handbook will also be found a List of Selected Literature that may be helpful to those who wish further information on the species described.

The drawings in the present handbook are from the gifted pen of Ronald With, illustrator on the staff of the Provincial Museum, to whom the author owes a debt of gratitude for his patience and skill. Finally, without the encouragement and support of Dr. A. F. Szczawinski, Curator of Botany in the Provincial Museum, this work would not have been completed.

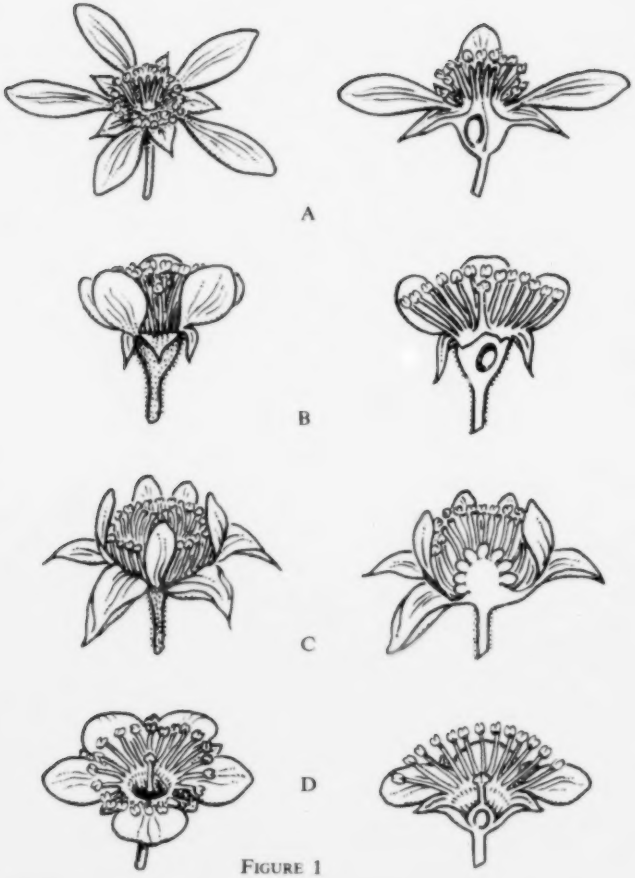


FIGURE 1

A. Inferior ovary of *Amelanchier*.
B. Epigynous flower of *Cratægus*.
C. Hypogynous flower with thalamus and numerous pistils of *Rubus*.
D. Perigynous flower with single pistil of *Prunus*.

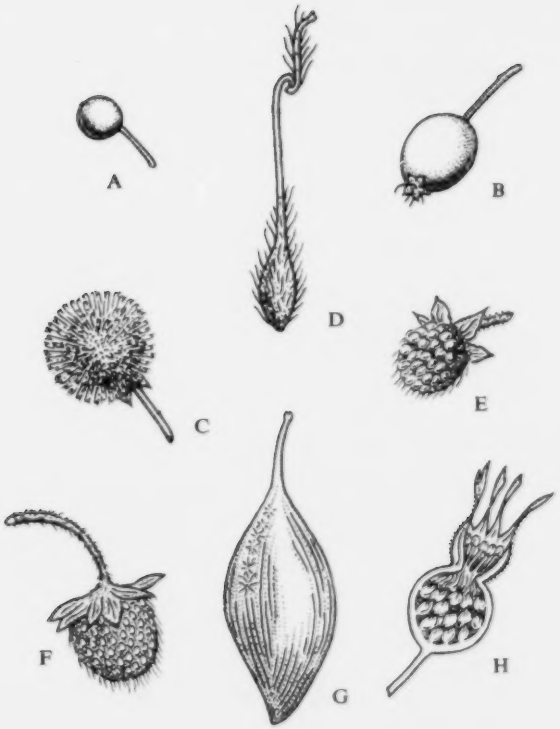


FIGURE 2

A. Drupe of *Prunus*.
B. Pome of *Malus*.
C. Aggregate of long-styled achenes of *Geum*.
D. One of the achenes of *Geum*, showing the long, hooked style.
E. Aggregate of drupelets of *Rubus*.
F. Aggregate of achenes on the fleshy thalamus (receptacle) of *Fragaria*.
G. Follicle of *Physocarpus*.
H. Longitudinal section of hip of *Rosa*, showing enclosed achenes.

FAMILY ROSACEÆ

Trees, shrubs, or herbs. Leaves various, simple or compound, usually alternate, sometimes with glandular teeth; stipules mostly present, sometimes caducous, free or adnate to petiole. Inflorescence various. Flowers perfect (polygamo-dioecious in *Osmaronia*), actinomorphic; floral tube free or adnate to the ovary, well developed or reduced to a shallow saucer. Sepals 5, often alternated with 5 bractlets. Petals 5, rarely lacking. Stamens mostly in multiples of 5, sometimes numerous, commonly in 3 whorls; anthers dehiscing longitudinally. Carpels 1 or more, free or variously connate; ovary superior or inferior; style commonly terminal but sometimes basal or lateral. Fruits (sometimes with an enlarged fleshy receptacle) various, achenes, drupes, drupelets, follicles, or pomes.

Genera 100; species 2,500; mainly North Temperate.

KEY TO THE GENERA

1. Ovary superior; fruit 1 or more achenes, follicles or drupes, or of several to many partly fused drupelets.
   2. Fruit fleshy, 1 or more drupes or partly fused drupelets.
      3. Carpels many, developing into partly fused drupelets; leaves compound in most cases ..... *Rubus*
      3. Carpels 1–5, forming free drupes; leaves simple.
         Carpel 1, drupe solitary; pith uniform; mostly trees ..... *Prunus*
         Carpels 5, drupes 1–3; pith chambered; dioecious shrubs *Osmaronia*
   2. Fruit dry, achenes or follicles, receptacle sometimes fleshy.
      4. Leaves simple, at most lobed or divided.
         5. Herbs or prostrate shrubs (sub-shrubby in *Luetkea*).
            6. Leaves deeply cleft; flowers in cymes or racemes.
               7. Herbaceous; erect; flowers in cymes.
                  Cymes terminal; stamens 4 ..... *Alchemilla*
                  Cymes axillary; stamens 1 ..... *Aphanes*
               7. Suffruticose, prostrate and creeping; flowers in terminal racemes ..... *Luetkea*
            6. Leaves entire or with shallow lobes; flowers solitary .. *Dryas*
         5. Erect shrubs.
            8. Leaves deeply cleft; flowers solitary ..... *Purshia*
            8. Leaves toothed or lobed; inflorescences, various.
               9. Flowers in large, creamy-white, showy panicles; fruits achenes ..... *Holodiscus*

9. Flowers otherwise; fruits follicles; leaves palmately lobed; inflorescence umbellate; follicles inflated ..... *Physocarpus*
Leaves merely toothed; inflorescence corymbose or paniculate; follicles not inflated ..... *Spiræa*

4. Leaves compound.
10. Leaves 3-foliate.
11. Plants dioecious; up to 2 m tall; leaves (some at least) ternately compound or divided; inflorescence a large panicle; fruits follicles ..... *Aruncus*
11. Plants with perfect flowers; low, usually much less than 1 m high; leaves 1-ternate; inflorescence otherwise.
12. Plants stoloniferous; receptacle conical, becoming fleshy in fruit ..... *Fragaria*
12. Plants not stoloniferous; receptacle flat, dry at maturity.
Corolla inconspicuous; petals less than 5 mm long; stamens 10 ..... *Sibbaldia*
Corolla conspicuous; stamens more than 10 *Potentilla*
10. Leaves pinnately or palmately compound, leaflets more than 3.
13. Achenes enclosed in the floral tube.
14. Floral tube becoming bur-like with a row of hooked bristles ..... *Agrimonia*
14. Floral tube without bristles.
Shrubs with prickles or bristles; petals present; hypanthium becoming fleshy at maturity ..... *Rosa*
Herbs: petals absent; hypanthium dry at maturity ..... *Sanguisorba*
13. Achenes not enclosed in the floral tube.
Styles geniculate; achenes long-beaked ..... *Geum*
Styles straight; achenes not long-beaked ..... *Potentilla*

1. Ovary inferior; fruit a pome.
15. Fruit with thin-cartilagenous or papery endocarp; stems unarmed, except for dried spur-shoots in *Malus*.
16. Cells of the ovary as many as the carpels; flowers not in racemes.
Leaves simple; flowers in simple corymbs ..... *Malus*
Leaves pinnately compound; flowers in compound cymes ..... *Sorbus*
16. Cells of the ovary twice as many as the carpels; flowers in racemes ..... *Amelanchier*
15. Fruit with bony endocarp; stems armed with stout thorns ..... *Cratægus*

AGRIMONIA L.

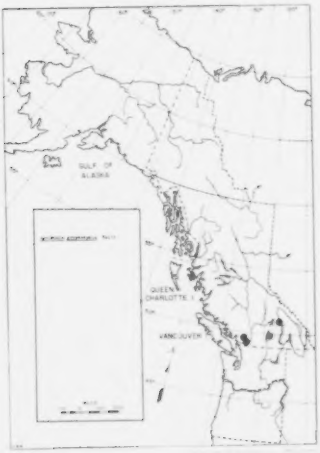
Perennial herbs with stout rhizomes. Leaves alternate, odd-pinnate, the larger leaflets interspersed with much smaller ones; stipules foliaceous, toothed or laciniate. Flowers regular, perfect, in a narrow, elongated raceme. Peduncles short, subtended by a laciniate bract. Sepals 5, more or less connivent after anthesis forming a beak on the fruit. Petals 5, yellow, small, clawless. Stamens 5–15, filaments slender. Carpels 2; stigmas 2-lobed; styles terminal. Fruit an achene.

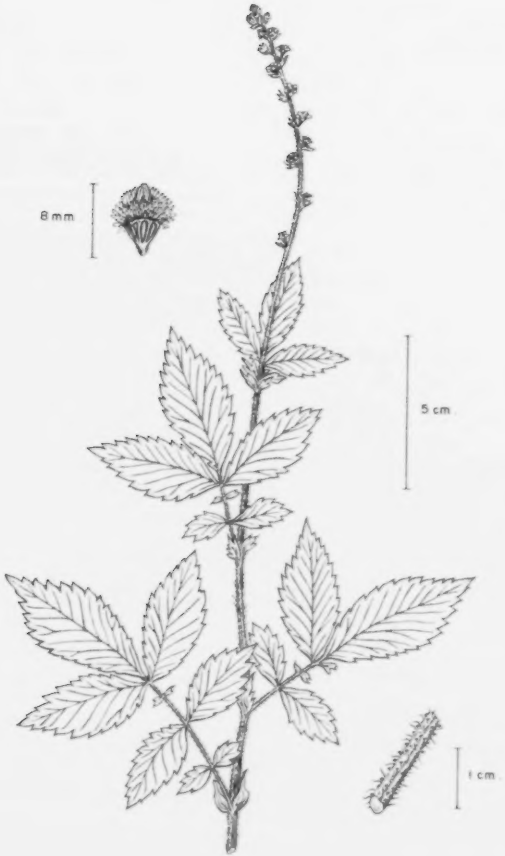
North Temperate zone genus of about 20 species.

Axis of inflorescence conspicuously glandular with sparse, long, spreading hairs; hypanthium without minute strigose hairs in the furrows ..... *A. gryposepala*

Axis of inflorescence without glands but with short, usually ascending hairs; hypanthium with minute strigose hairs in the furrows ..... *A. striata*

1. *Agrimonia gryposepala* Wallr.—Roots fibrous from thick rootstock. Stem stout, up to 1.8 m tall, glandular, sparsely to densely long pubescent throughout. Leaves remote, larger leaflets 5–9, oblong-oblanceolate to narrowly obovate, coarsely toothed, glandular dotted beneath, glabrous except on the veins; smaller





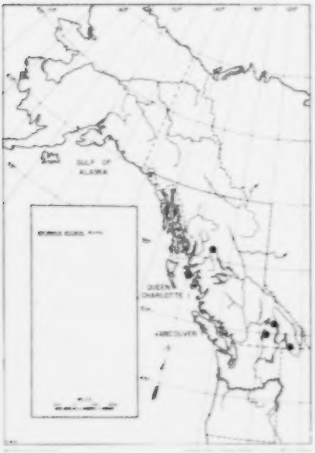
Agrimonia gryposepala **Wallr.**

leaflets in several pairs; stipules semicordate. Inflorescence glandular with spreading hairs longer than the diameter of the axis. Calyx lobes broadly lanceolate. Fruits 6–8 mm long, bristles hooked, spreading, those of the short, outer series often reflexed.

Thickets and edge of woods; British Columbia to Newfoundland, south to California, Arizona, Missouri, Tennessee, and North Carolina. Apparently not common, known only from the extreme south of British Columbia.

2. *Agrimonia striata* Michx. — Strongly rhizomatous with fibrous roots. Stem stiff, up to 1.7 m tall, hirsute below, pubescent and glandular above. Larger leaflets 7–11, lanceolate to narrowly obovate, long acuminate, coarsely toothed, sparsely pubescent beneath, particularly on the veins, somewhat glandular dotted; stipules lanceolate to semiovate. Axis of inflorescence eglandular, densely pubescent with mostly ascending hairs mixed with a few long, spreading hairs. Calyx lobes narrowly lanceolate, hypanthium glabrous, minutely fine strigose in the furrows. Fruit 4–5 mm long, bristles ascending or connivent from a narrow base, not reflexed.

Woods; British Columbia to Newfoundland, south to Arizona, New Mexico, Nebraska, Ohio, and West Virginia. Not common, known from Hazelton, and southern British Columbia valleys.



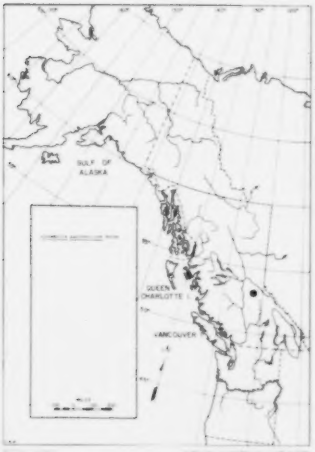
Agrimonia striata Michx.

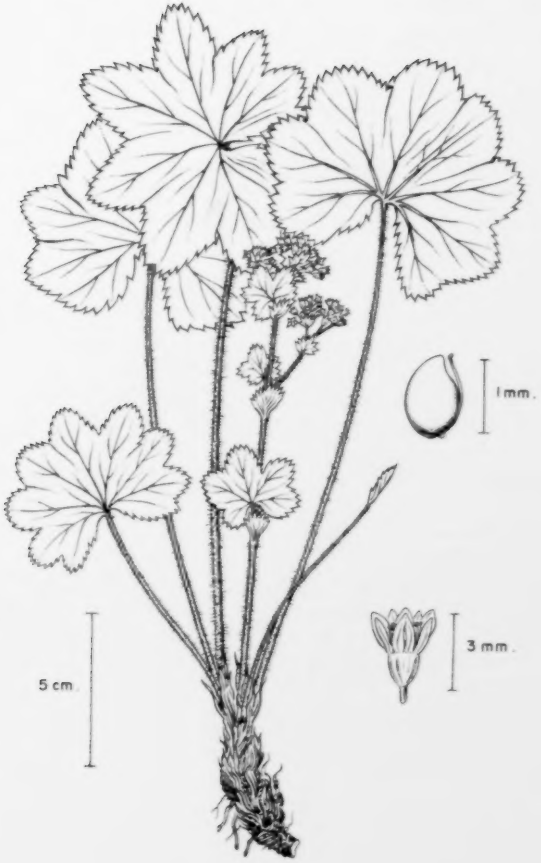
ALCHEMILLA L.

Perennial herbs. Basal leaves petioled; stipules brown or wine-coloured, scarious; blades palmately lobed or divided; stem leaves with connate adnate stipules; blades short petioled or sessile. Inflorescence cymose. Flowers yellowish or greenish, often grouped in terminal clusters. Hypanthium campanulate. Flowers 4-merous with an epicalyx. Petals 0. Stamens 4, on margin of disk, alternate with sepals; filaments short, anthers transversely introrse. Carpel 1; style basal; stigma capitate. Fruit an achene.

Large genus of the North Temperate zone and mountains of tropical Africa.

Alchemilla xanthochlora **Rothm.** — Perennial from stout rootstock. Stems up to 50 cm tall, hirsute with spreading hairs. Basal leaves long petioled; petioles hirsute with spreading hairs; stipules scarious, brown; leaf blades orbicular or rounded-reniform up to 13 cm broad, plicate, glabrous, and light green above, glaucous and appressed pubescent beneath; lobes 9–11, rounded, with forward pointing, obliquely ovate teeth. Stem leaves subsessile, reniform; stipules small, connate, rounded. Inflorescence open





Alchemilla xanthochlora Rothm.

cymose, many flowered. Flowers small, yellowish. Bractlets and sepals glabrous, about 1.5 mm long, former lanceolate, latter ovate (*A. vulgaris* L. in part, *A. pratensis* of auth. not Opiz).

Open grasslands; Western and Central Europe; naturalized in British Columbia. Known only from Bowron Lakes.

AMELANCHIER Medic.

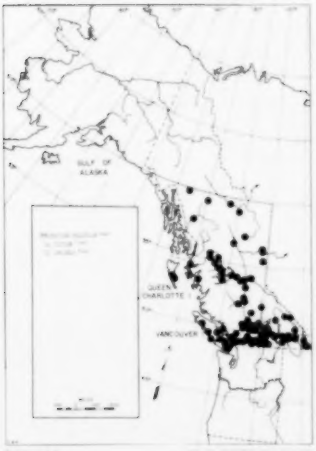
Slender shrubs or small trees. Leaves simple, deciduous, alternate, petioled, pinnately veined, usually serrate, sometimes entire; stipules caducous, linear, free. Flowers perfect, regular, in small terminal racemes on the current growth. Pedicels bracteate at base, often with a second more median bract. Hypanthium urceolate or campanulate, somewhat flared, more or less adnate to the carpels, bearing internally a nectariferous disk. Calyx 5-lobed, lobes triangular to lanceolate, persistent. Petals 5, white (rarely pink), oblanceolate to narrowly oval, showy. Stamens mostly 10–20, short, inserted on the rim of the calyx; filaments subulate, somewhat persistent. Carpels 2–5, more or less united to form an inferior ovary. Fruit a pome.

A small genus of mostly temperate North America and Eurasia. A few species are cultivated as ornamentals.

JONES, G. N. American species of Amelanchier. Illinois Biol. Mongr. **20**:1–126. 1946.

***Amelanchier alnifolia* Nutt.**—Shrubs or small trees up to 7 m tall. Stems smooth, bark dark grey to reddish brown; twigs commonly silky pubescent at first, later glabrate. Leaves petioled, blades firm, oval or more often suborbicular, cuneate or rounded to subcordate, rounded at tip, margins wholly or in part sharply serrate, glabrous to sparsely or copiously pubescent at least beneath. Inflorescence a short, leafy raceme. Flowers often showy, on slender ascending pedicels. Sepals various as to pubescence but frequently quite pubescent within the hypanthium; lobes acute, spreading to reflexed. Petals usually 10–20 mm long, linear to oblanceolate or even oval. Stamens about 20. Styles usually 5, sometimes 4; ovary almost fully inferior; inside of hypanthium

Amelanchier alnifolia Nutt.



glabrous to densely pubescent. Fruit glabrous, more or less glaucous, purple to nearly black, juicy, edible (*A. florida* Lindl., *A. cusickii* Fern.).

Exposed places at all altitudes; Alaska to California, east to Alberta, North Dakota, South Dakota, Nebraska, Colorado, New Mexico, and Arizona; general throughout.

APHANES L.

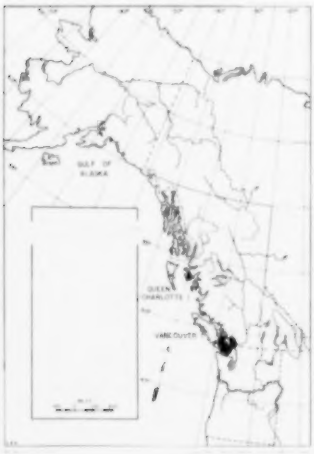
Small annual herbs. Stems up to 1 dm tall, equably leafy. Leaves short petioled or subsessile; stipules connate and adnate to the petioles or leaf blades, few-toothed; blades deeply palmately ternate and again toothed or lobed. Inflorescence dense, clustered axillary cymes. Hypanthium ellipsoid-urceolate. Sepals usually 5, subtended by as many or fewer bractlets, sometimes none. Petals 0. Stamens usually 1 (occasionally 2), inserted on the

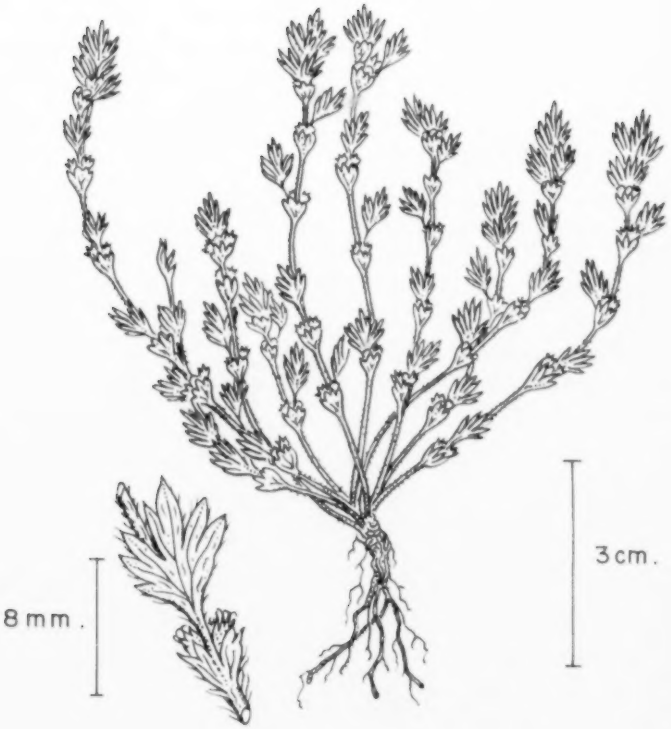
inner margin of the disk opposite a sepal; filaments short; anthers extrorse. Carpels usually 2; styles basal, slender. Fruit an achene.

A small, nearly cosmopolitan genus of about 12 species.

***Aphanes occidentalis* (Nutt.) Rydb.**—Low annuals. Stems up to 10 cm long, much branched, ascending, more or less villous hirsute with ascending hairs. Leaves short petioled with connate stipules; blades cuneate-flabellate, deeply 3-parted into cuneate divisions, divisions again deeply cleft, sparingly hirsute on both sides. Flowers somewhat clustered in the axils of dilated, sheathing stipules. Sepals about 1.5 mm long, ovate acutish; hypanthium hirsute-villous with spreading hairs. Achenes glabrous, ellipsoidal, about 1 mm long. (*Alchemilla occidentalis* Nutt.)

Fields and open places in woods; southern British Columbia to California, eastern Washington and Oregon; the same or closely related species is common in eastern North America. Southern Vancouver Island, and adjacent Mainland.





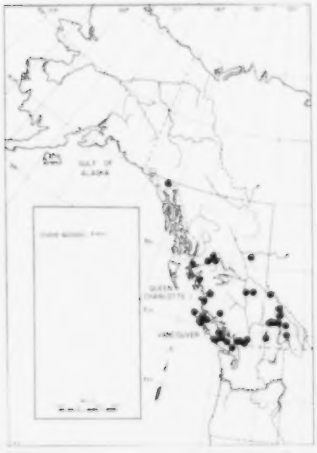
Aphanes occidentalis (Nutt.) Rydb.

ARUNCUS Kostel.

Dioecious, perennial herbs. Rhizomes stout, short-creeping. Leaves both basal and cauline, long petioled, alternate, ternately compound, toothed, estipulate. Inflorescence a densly flowered terminal panicle of simple to much branched racemes, bracts linear. Flowers small. Calyx 5-toothed. Petals 5, small, spathulate, inserted at the throat of the calyx-tube. Stamens about 20. Carpels usually 3, free; ovary superior. Fruit a coriaceous follicle.

A few species limited to colder parts of the temperate regions of the Northern Hemisphere.

***Aruncus sylvester* Kostel.**—Stem glabrous, up to 2 m tall. Lower leaves 3 times compounded, less so above; ultimate segments lanceolate to lance-ovate, long acuminate, acute, truncate or subcordate at base, sharply and doubly serrate, thin, more or less hairy on both sides, sometimes glabrous. Panicle up to 4 dm long, both terminal and axillary, often much branched, axis frequently crisp-pubescent. Calyx about 2 mm broad, the spreading lobes about equalling the hypanthium. Petals white, about 1 mm long, slightly shorter in pistillate flowers, rounded-obovate to elliptic.



Aruncus sylvester Kostel.

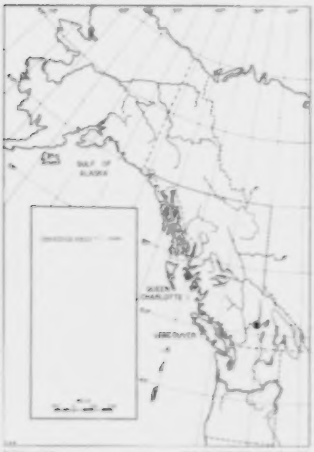
Follicles about 3 mm long, dark straw coloured, short style persistent (*A. acuminatus* (Dougl.) Rydb. *A. vulgaris* Raf.).

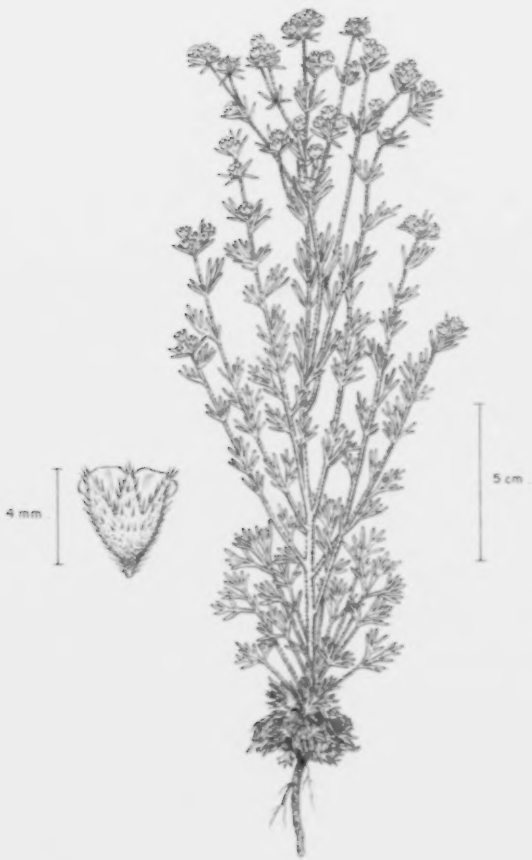
Damp woods and stream sides; Alaska to northern California, east to Rocky Mountains in British Columbia, and in Peace River District, western Washington, and Oregon; Eurasia. Commoner west of the Coast Mountains and in the Selkirks.

CHAMÆRHODOS Bunge

Biennial, or short-lived perennial herbs. Leaves several times ternately divided. Inflorescence cymose. Flowers small with cup-shaped hypanthium. Calyx lobes 5, erect or convergent. Petals obovate or cuneate, more or less clawed, deciduous. Stamens 5, opposite the petals, filaments short; anthers didymous. Carpels 5–10 or more; styles basal, filiform. Fruit a membranous, ovoid-pyriform achene.

A genus of five species, all except ours Siberian.





Chamærhodos erecta (L.) Bunge.

***Chamærhodos erecta* (L.) Bunge**—Biennal or short-lived perennial with stout, woody taproot. Stems up to 3 dm tall, erect, simple below, freely branched above, hirsute with glandular pubescence. Basal leaves numerous, rosulate, petioled, several times ternately divided into linear or oblong segments, hirsute, glandular-pubescent, marcescent. Stem leaves similar but smaller and less divided. Inflorescence a many-flowered, much-branched, flat-topped cyme. Flowers numerous; pedicels erect or nearly so, shorter than the flowers. Sepals narrowly lanceolate, about 5 mm long; hypanthium hispid, at least in the sinuses of the lobes. Petals white, obovate cuneate, about equal to the sepals. Styles about equalling the stamens. Achenes 1.5 mm long (*C. nuttallii* Rydb.).

Dry slopes and plains, often on gravelly or sandy soil; southeast Yukon, Alberta, Saskatchewan, Manitoba, south to North Dakota, Colorado, Minnesota, and Michigan. Known with us by a single collection near Kamloops.

CRATÆGUS L.

Deciduous trees or shrubs, usually with thorns. Leaves lobed or serrate, petiolate, with small, deciduous stipules. Flowers regular, perfect, in compound or nearly simple cymes, rarely solitary. Sepals 5, entire or glandular-serrate. Petals 5, white (rarely pink), showy. Stamens 5–25 in 1–5 rows. Carpels 1–5, free at apex but united at base; styles persistent. Fruit a rather mealy pome, reddish, blue-black, or yellowish.

A large genus of very complicated taxonomy due to apomyxis, polyploidy, aneuploidy, and hybridization. Limited to the North Temperate zone in both the Old and New Worlds. Some species are commonly cultivated.

1. Veins of the leaves running to the sinuses as well as to the points of the lobes; leaves deeply lobed with sinuses reaching more than half way to the midrib; style 1 (occasionally 2 in some flowers) ... *C. monogyna*

1. Veins of the leaves not running to the sinuses; leaves subentire to shallowly lobed; styles 2–5.

   Styles usually 5, occasionally 4; thorns stout, 2 cm long or less; fruit black; sepals tending to be short, triangular; ovary rarely at all tomentose ... *C. douglasii*

Styles usually 2–4, occasionally 5; thorns more slender, more than 3 cm long; fruit red; sepals attenuate, frequently glandular toothed; ovary often tomentose ..... *C. columbiana*

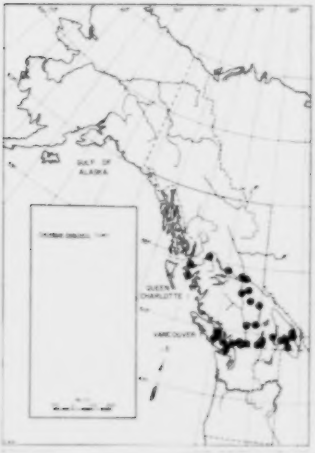
1. *Crataegus columbianum* Howell — Small tree or much branched shrub up to 4 m tall with long, rather slender thorns. Leaves narrowly ovate to obovate or orbicular, coarsely 1–2 dentate and somewhat lobed, generally more or less pubescent on both surfaces, cuneate. Inflorescence many flowered. Calyx lobes narrowly lanceolate about 4 mm long, pubescent on both surfaces, strongly glandular-denticulate. Petals white, up to 8 mm long. Stamens 10. Styles 2–4, rarely 5; ovary and hypanthium crisp pubescent to lanate. Fruit reddish purple, pubescent to glabrate (*C. piperi* Britt.).

Open places, particularly along streams; southeastern British Columbia to Alberta, south to northeastern California, Idaho, and Montana. In British Columbia from Prince George south through the Okanagan and Kootenay Valleys, also Peace River District.

Cratægus columbianum Howell.

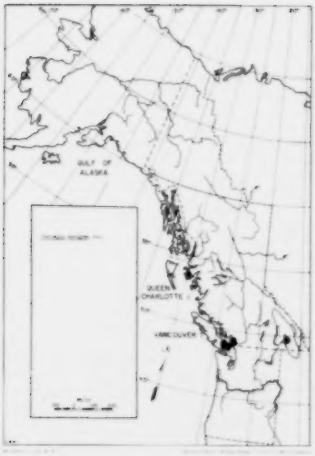
2. *Crataegus douglasii* Lindl.—Shrub or small tree to 10 m tall with short, stout thorns less than 2 cm long. Leaves broadly obovate up to 7 cm long, obtuse or acutish at apex, cuneate, more or less doubly serrate, glabrous beneath, pubescent at least on the midrib above. Inflorescence many flowered. Calyx lobes rather broadly triangular, more or less villous toward the apex, reflexed, mostly entire. Petals white, about 5 mm long. Stamens 10–20. Hypanthium glabrous; styles usually 5. Fruit black, glabrous.

Open places generally; southern Alaska to California, east to Alberta, North Dakota, South Dakota, northern Wyoming; northern Great Lakes region. Common in British Columbia south of Lat. 55°N.



Cratægus douglasii Lindl.

Cratægus monogyna Jacq.



3. *Cratægus monogyna* Jacq. — Thorny, much branched shrub or small tree. Leaves ovate or obovate in outline, 3–7 lobed; lobes usually reaching more than half way to the midrib, tapered to an acute or subobtuse apex, entire or sparingly serrate near their apices, veinlets running to sinuses as well as to the apex of the lobes. Sepals triangular, about twice as long as broad. Petals white, about 5 mm long. Style 1. Fruit deep red, single seeded.

A European species that is much cultivated in a variety of forms and which sometimes naturalizes.

DRYAS L.

Low, depressed, strongly cæspitose shrubs. Stems long, much branched, freely rooting, often forming large colonies. Leaves alternate, leathery, tardily deciduous, petioled, simple, crenate or entire, more or less rugose and mostly glabrous above, usually white-tomentose below; stipules linear-lanceolate, about two-thirds adnate to the petiole. Flowers solitary, as a rule on erect peduncles. Hypanthium saucer-shaped, flattened or convex, tomentose and glandular. Sepals 8–10, persistent. Petals 8–10, white or pale

yellow, short clawed. Stamens numerous, filaments subulate, glabrous or pubescent; anthers yellow. Carpels numerous; style terminal, persistant, in fruit much elongated and plumose, hygroscopic so that they may become spirally twisted together. Fruit an achene.

A small arctic-alpine genus of about a dozen species in Eurasia and North America. (From Latin *dryas*, a wood nymph.)

PORSILD, A. E. The genus *Dryas* in North America. Can. Field Nat. **61**:175–192. 1947.

HULTÉN. Studies in the genus *Dryas*. Svensk. Bot. Tidsk. **53**:507–542. 1959.

1. Sepals broadly ovate; petals yellow, erect to somewhat spreading but never expanded during anthesis; filaments hairy, at least below; peduncles with 1–4 vestigial bracts; leaves always cuneate at base ..... *D. drummondii*

1. Sepals narrowly lanceolate; or oblong-lanceolate; petals white, fully expanded in anthesis; filaments glabrous; peduncles naked or at most with 1 vestigial bract; leaves truncate or cordate.

   2. Prominent median vein of underside of leaves, and sometimes also the lateral veins and the petioles, with sessile or stalked glands that are naked or bear lateral tufts of hairs; upper surface of leaves strongly rugose.

      Upper surface of leaves dark green, usually dull, without punctiform glands and not glandular-viscid; median and sometimes lateral veins on the underside of leaves bearing peculiar gland-tipped brown hairs with little tufts of white hairs on their sides ..... *D. octopetala*

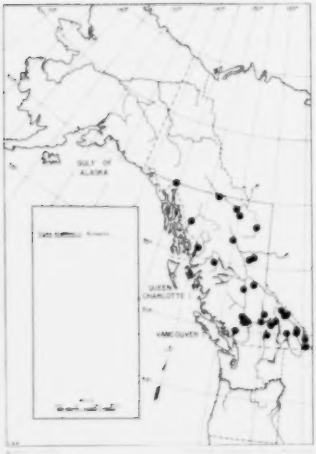
      Upper surface of leaves with punctiform, wart-like excrescences, especially on the lobes and often on the petioles and stipules as well, or merely glandular-viscid from colourless, clear, balsam-like secretions along the leaf-folds; gland-tipped hairs on the dorsal veins always naked ..... *D. hookeriana*

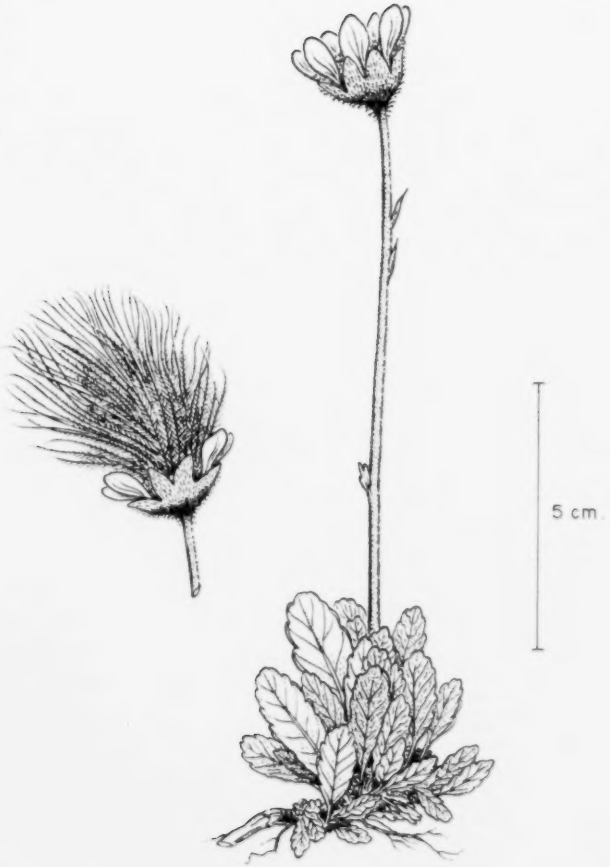
   2. Median vein of the underside of the leaves eglandular; leaves broadest below the middle, upper surface slightly or not at all rugose; leaf margins entire or with shallow, rounded incisions rarely extending above the middle of the leaf ..... *D. integrifolia*

1. *Dryas drummondii* Richards—Leaf blades elliptic-obovate, cuneate at base, rounded at apex, coarsely crenate, dark green, dull, strongly rugose and glabrous above, white tomentose beneath. Penduncles up to 25 cm long with 1–4 very reduced bracts and occasionally vestigial flowers; more or less tomentose, somewhat stipitate glandular near the top. Hypanthium and calyx densely covered with black gland-tipped hairs, villous; lobes of sepals ovate. Petals pale yellow, elliptic, about 12 mm long, ascending, never fully expanded. Filaments hairy, at least toward the base.

On gravelly, usually calcareous, soil at all altitudes. Alaska south through British Columbia to northeastern Washington and Oregon, east to Great Slave Lake; north shore of Lake Superior and Gulf of St. Lawrence. General on the mainland but apparently absent from the coastal islands, including Vancouver Island.

Easily distinguished by its pale yellow, never-expanded flowers, broadly ovate sepals, and cuneate leaves.

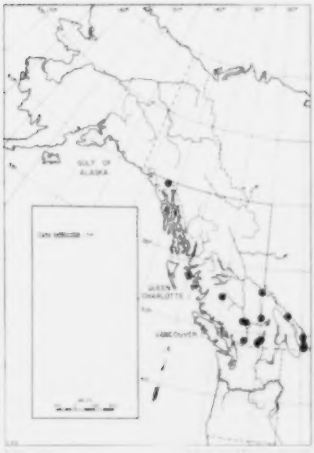


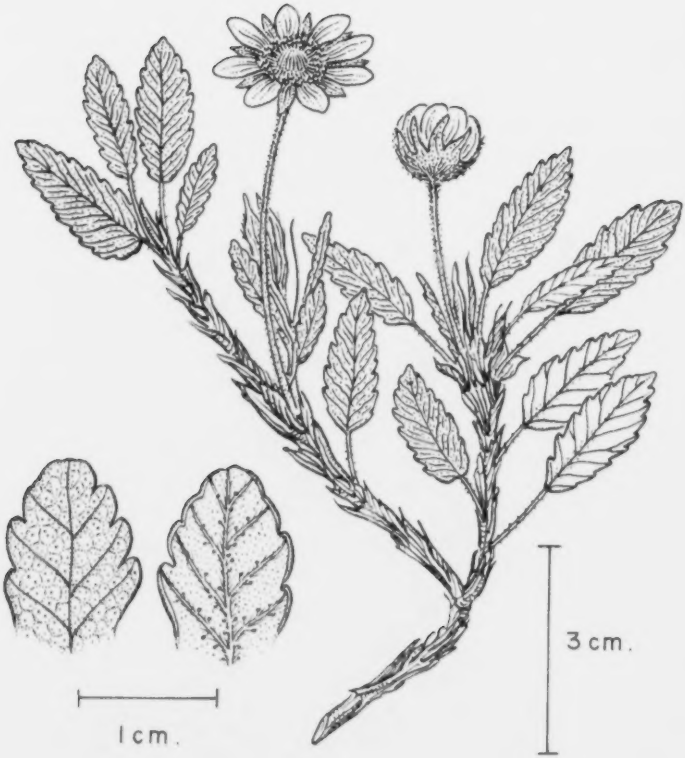


Dryas drummondii Richards.

2. *Dryas hookeriana* Juz.—Leaf blades ovate to oblong-ovate, tips blunt or rounded, subcordate rarely truncate at base, deeply and coarsely incised-serrate with 5–12 unequal, rounded teeth on the slightly revolute margin; upper surface glandular-punctate, dull, rugose, glabrous or with scattered white hairs; lower surface canescent tomentose with, in addition, stalked or sessile, yellowish, brown glands, branched hairs or glands bearing white tufted hairs lacking; petioles equalling or shorter than the blade. Scape white tomentose with black, stipitate glands, bractless or with 1 vestigial bract. Calyx tomentose with prominent black, stipitate glands, lobes linear-lanceolate, glandular in lower half, appressed silky above. Petals white, about 6 mm long, obovate-elliptic. Achenes about 3 mm long.

Alpines areas; Rocky Mountain region (mostly between Lat. 40–55°N.). General but not common on the mountains of southern British Columbia, absent from Vancouver Island.



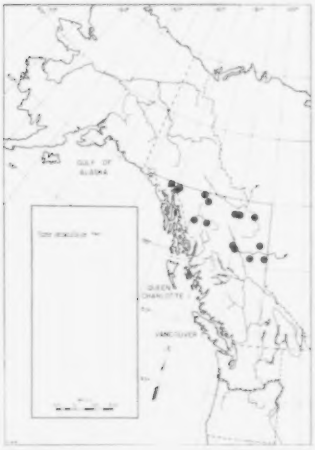


Dryas hookeriana Juz.

3. *Dryas integrifolia* Vahl.—Leaf blades lanceolate-oblong, about 3 times as long as broad, definitely broadest below the middle, cordate or truncate, margins entire or with a few teeth in the lower half, more or less revolute, glabrous or rarely canescent-tomentose, scarcely or not at all rugose above, white tomentose beneath, midrib not prominent, eglandular; petioles and stipules glabrous or sparingly tomentose. Peduncles bractless and usually lacking stipitate glands. Hypanthium sparingly tomentose, brownish black with few stipitate black glands. Sepal lobes linear-lanceolate, about 6 mm long. Petals white, elliptic, about 1 cm long, spreading.

A pioneer species, mostly on rocky and gravelly places at high altitudes; Alaska to Greenland, south to British Columbia, Alberta, Manitoba, Lake Superior; Gulf of St. Lawrence, and New Hampshire. South in the Province to about Lat. 55°N.

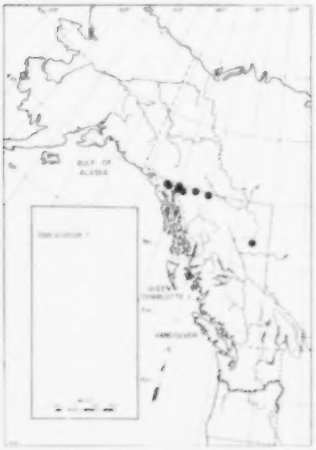
This characteristic species varies mostly in the width of its leaves and the relative lengths of the petioles. An extreme form with thin, flat blades, entire, scarcely revolute margins and petioles about equalling the blades is var. *sylvaticum* Hult. This species appears to hybridize with *D. octopetala* in the Haines district of northwestern British Columbia.

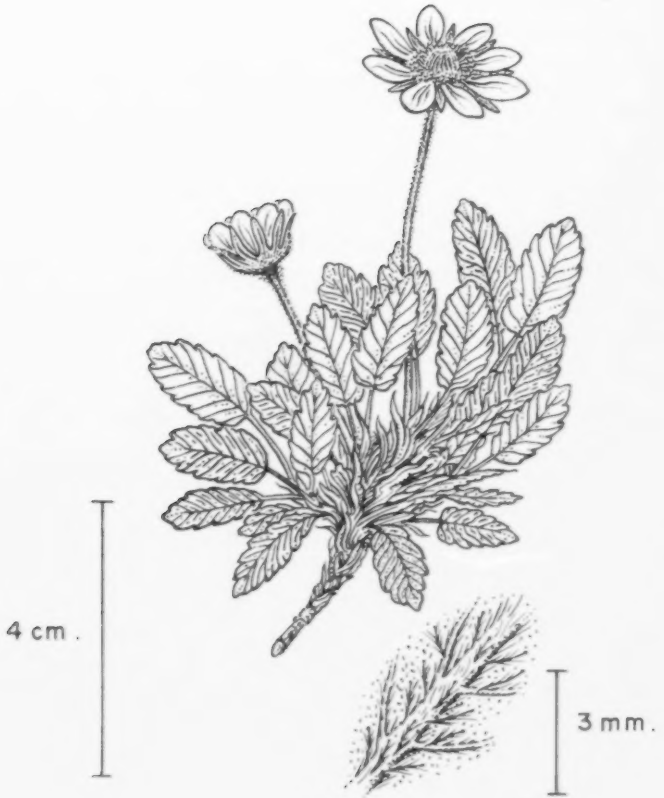


Dryas integrifolia Vahl.

4. *Dryas octopetala* L.—Leaf blades ovate-oblong, less than 2½ times as long as broad, crenate-dentate, margins more or less revolute, cordate or truncate at base, obtuse, strongly rugose, glabrous or sparingly hirsute above, white tomentose beneath, prominent veins with stipitate brown hairs with tufts of long white hairs on their sides. Peduncles tomentose with stipitate black glandular hairs above. Sepals oblong, tomentose with stipitate black glandular hairs. Petals white, oblong, up to 2 cm long.

Rocky and gravelly situations in arctic-alpine regions; arctic Eurasia, Alaska, Yukon, east to Mackenzie Delta. Known in British Columbia from near the Yukon boundary and as far east as Peace River.





Dryas octopetala L.

FRAGARIA L.

Perennial, stoloniferous herbs. Leaves ternately compound in a basal rosette; leaflets more or less obovate-cuneate, coarsely serrate. Inflorescences few-flowered cymes on axillary peduncles. Flowers 5-merous. Epicalyx present. Hypanthium flat with glabrous receptacle. Stamens about 20. Carpels numerous, glabrous, free, borne on the surface of the receptacle that becomes much enlarged, fleshy, juicy and brightly coloured when the achenes are mature.

About 35 species natives of temperate and subtropical regions of the Northern Hemisphere and in South America.

RYDBERG, P. A. A monograph of the North American Potentillæ. *Fragaria*. Mem. Dept. Bot. Columbia Univ. **2**:165–185. 1898.

STAUDT, G. Taxonomic studies in the genus Fragaria—Typification of *Fragaria* species known at the time of Linnæus. Can. Jour. Bot. **40**:869–886. 1962.

Leaves thick and coriaceous, strongly reticulate-veiny beneath, rugose above; strictly maritime species ..... *F. chilöensis*

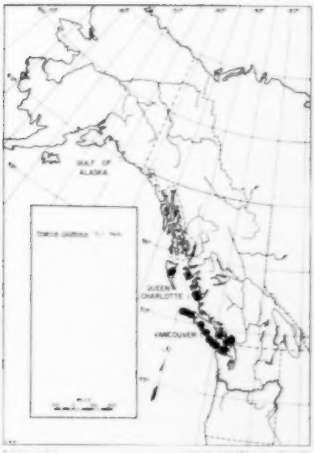
Leaves generally thin, not coriaceous and reticulate-veiny, not rugose above; widely ranging species.

Terminal tooth of leaflets usually surpassing the adjacent lateral ones; leaflets essentially sessile; peduncle with mature fruit shorter than leaves; achenes superficial ..... *F. vesca*

Terminal tooth of leaflets much narrower and shorter than adjacent lateral ones; leaflets petiolulate; peduncles with mature fruit longer than the leaves, achenes sunken in pits ..... *F. virginiana*

1. *Fragaria chilöensis* (L.) Duch.—Rootstock short and thick; runners stout, usually short. Leaves numerous; stipules large, scarious; petioles up to 20 cm long, stout, rather densely silky with mostly spreading hairs; blade broadly obovate, crenate, thick, coriaceous, strongly nerved and veiny; terminal leaflets clearly petiolulate, broadly obovate, truncate, subocordate or sometimes rounded at apex, crenate above the middle, terminal tooth shorter and smaller than adjacent onces, lateral leaflets similar but smaller and subsessile. Scape densely silky strigose, usually less than 20 cm long from much shorter than to overtopping the leaves, branch-

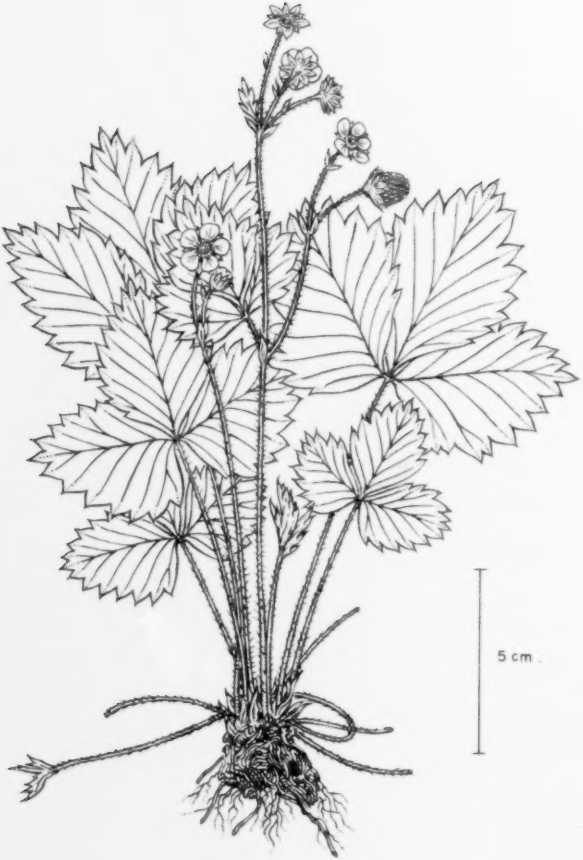
Fragaria chilöensis (L.) Duch.



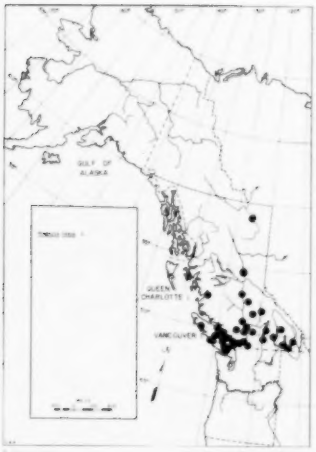
ing low down. Flowers 20–35 mm in diameter. Hypanthium, sepals, and bracteoles silky hairy; bracteoles conspicuous, rather narrowly elliptic. Sepals lanceolate, acuminate. Petals 5–7, more or less obovate, undulate, more than half as long again as the sepals. Fruit hemispheric, about 1.5 cm in diameter, hairy; achenes slightly immersed in the receptacle.

Open situations along the Coast, Alaska to Chili; Hawaii.

2. *Fragaria vesca* L.—Rootstock 1–several, crowded, short and thick; stolons numerous. Leaflets thin, bright yellow-green on upper surface, paler and somewhat glaucous below, sessile or nearly so, ovate to obovate, more or less silky when young, later glabrate, coarsely serrate with sharp rather divergent teeth, terminal tooth more than half as wide as the adjacent lateral teeth and projecting beyond them. Peduncle at anthesis shorter than the leaves but usually surpassing them in fruit. Pedicels unequal, inflorescence racemiform; bracteoles linear-elliptic about the same



Fragaria vesca L.



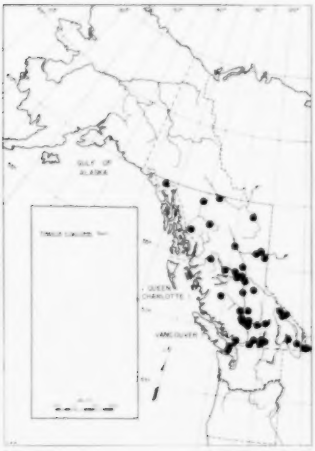
length as the sepals. Sepals acuminate, 4–5 mm long, silky pilose. Petals obovate, obtuse, mostly less than 7 mm long, about twice as long as the sepals. Achenes essentially superficial on the receptacle (*F. bracteata* Heller).

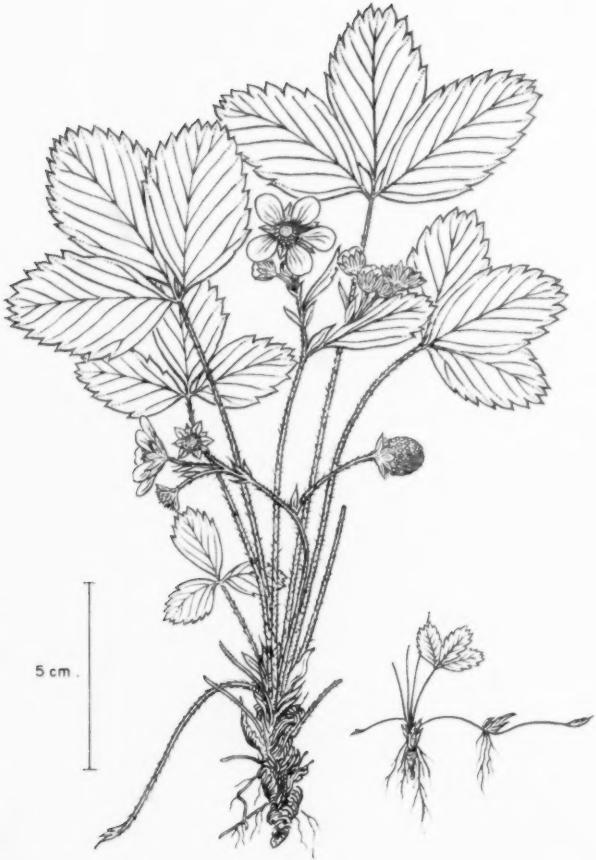
Open places; cool temperate North America; Europe. Common in southern British Columbia.

3. *Fragaria virginiana* Duch.—Rootstock usually a single crown; freely stoloniferous. Leaflets petiolulate, glabrous to silky pubescent below, obovate to cuneate-obovate, teeth blunter and less divergent than in No. 2, terminal tooth commonly less than half as wide as the adjacent lateral teeth and surpassed by them. Pedicels more or less the same length; inflorescence corymbiform, mostly shorter than the leaves even in fruit. Bracteoles lanceolate, shorter

than the sepals. Sepals lanceolate-elliptic. Petals more or less orbicular, usually more than 8 mm long and more than twice the length of the sepals. Achenes sunken in pits in the receptacle (*F. platypetala* Rydb., *F. glauca* Rydb.).

Open places generally; throughout much of U.S. and southern Canada. Generally common in British Columbia, although less so on the Coast than in the Interior.





Fragaria virginiana **Duch.**

GEUM L.

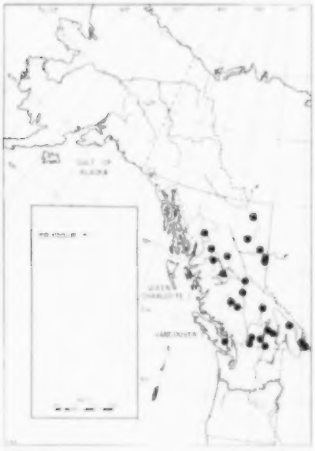
Perennial, rhizomatous herbs. Radical leaves unequally pinnate or lyrate with a large terminal lobe; stipulate; upper leaves trifoliate or simple. Flowers solitary or in cymose inflorescence; 5-merous, yellow, white, or purplish. Epicalyx usually present consisting of 5 bractlets in sinuses of calyx. Stamens numerous, 20 or more. Receptacle dry, conic or cylindrical. Carpels numerous, free; style terminal, enlarged, and persistent as an awn in fruit, sometimes hairy. Achenes tipped with persistent style-base, hooked in some species.

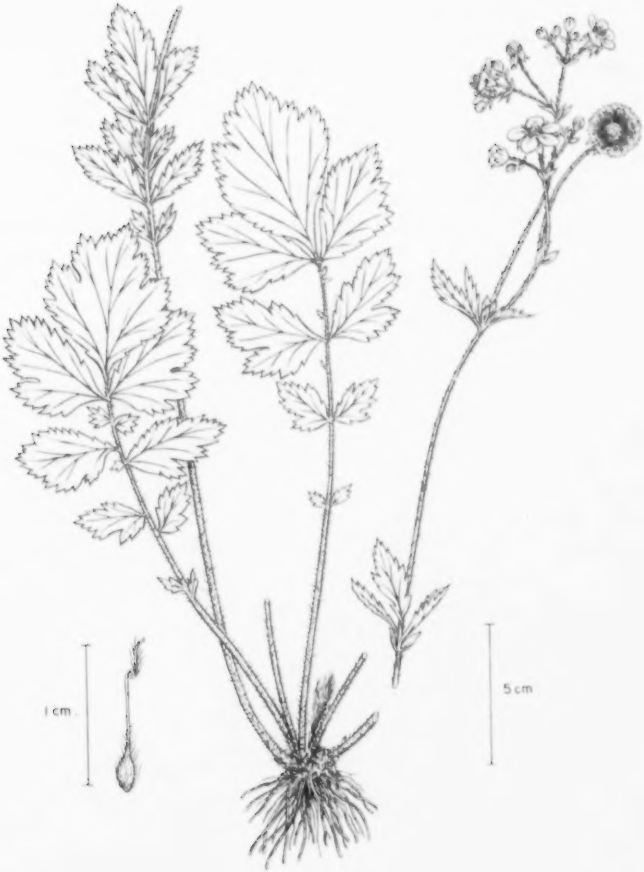
Forty species of temperate regions of both hemispheres, also in the Arctic.

1. Style jointed at or above the middle, persistent basal portion hooked, terminal, deciduous.
   2. Sepals green or greenish, reflexed at anthesis; flowers erect; petals spreading.
      Terminal segment of lower leaves many times larger than the main lateral lobes, rounded to subcordate at base; persistent portion of style sparsely glandular pubescent ..... *G. macrophyllum*
      Terminal segment somewhat larger than the main lateral lobes, cuneate at base; persistent portion of style not glandular, sometimes slightly hirsute near base ..... *G. aleppicum*
   2. Sepals purple or reddish, spreading or ascending at anthesis; flowers more or less nodding; petals erect or ascending ..... *G. rivale*
1. Styles not obviously jointed, not deciduous.
   3. Petals erect to convergent, flowers vase-shaped; cauline leaves 2 or 4, opposite with sheathing base ..... *G. triflorum*
   3. Petals spreading, flowers more rotate; cauline leaves 1–several, alternate.
      4. Basal leaves lyrately pinnate; styles conspicuously exserted from calyx in fruit.
         Terminal leaflet reniform to orbicular, never deeply lobed; lateral leaflets few, much reduced; caudex woody and covered with rufescent-pubescent scales ..... *G. calthifolium*
         Terminal leaflet ovate and usually 3-lobed or cleft; lateral leaflets many, well developed; caudex woody and covered with coarse fibres ..... *G. schofieldii*
      4. Basal leaves pinnatifid, elliptic, never lyrate, styles not conspicuously exserted from calyx in fruit ..... *G. rossii*

1. ***Geum aleppicum*** **Jacq.**—Stems hairy, especially below, up to 1 m tall. Leaves very variable; radical leaves long petioled; leaflets 5–9, cuneate-obovate to oblanceolate, incised serrate, with interspersed smaller leaflets, terminal lobe rather larger, rounded; stem leaves with 3–5, deeply cut rhombic-ovate, acute leaflets. Inflorescence rather stiff. Calyx lobes lanceolate to lance-ovate, up to 9 mm long, reflexed at anthesis. Petals orange or deep yellow, suborbicular, about equalling or slightly exceeding the sepals. Fruiting heads globose; achenes spreading, hispid at top; basal segment of style often hirsute below, terminal segment conspicuously short hirsute (*G. strictum* Ait.).

Swamps and meadows; British Columbia to Quebec, south to California, New Mexico, Nebraska, Iowa to West Virginia; Eurasia. In the Interior, also in the Peace River District and southern Vancouver Island.

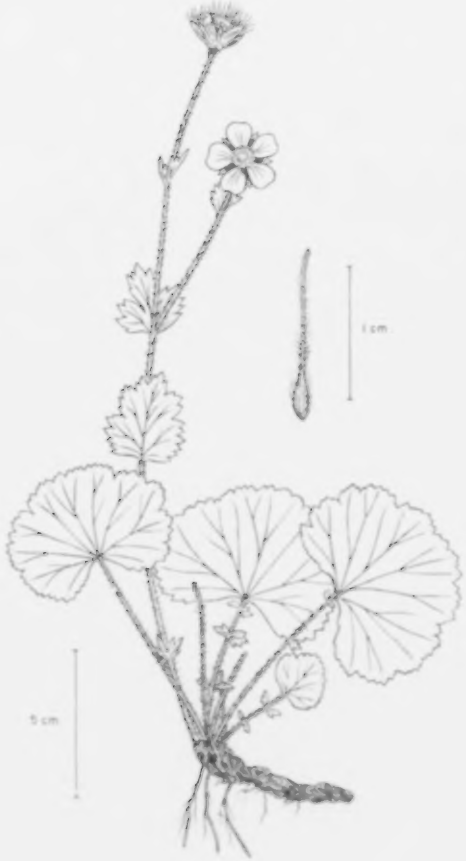




Geum aleppicum Jacq.

2. *Geum calthifolium* Menzies — Coarse perennial with spreading yellowish hairs. Rhizome fairly stout, short creeping, branching. Radical leaves long petioled, terminal leaflet more or less orbicular up to 12 cm in diameter, shallowly lobulate, irregularly toothed, cordate, lustrous above, lateral lobes much reduced, few or wanting; stem leaves sessile, coarsely serrate and lobed. Scape up to 25 cm long, erect, few-flowered. Flowers yellow, large. Pedicels and sepals densely puberulent. Calyx lobes lanceolate, acute, hirsute. Petals broadly obcordate, emarginate, about 12 mm long. Achenes numerous, long hispid-hairy, style plumose in fruit.

Coastal bogs, alpine slopes, and meadows; Alaska to British Columbia; east Asia. Known from the Queen Charlotte Islands and adjacent Mainland south to Vancouver Island.



Geum calthifolium Menzies.

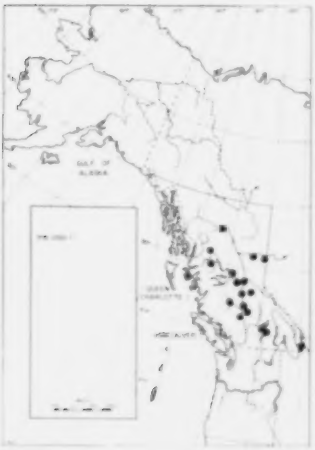
3. *Geum macrophyllum* Willd.—Stem to 1 m tall, bristly hairy below. Radical leaves long petioled, terminal segment rotund to cordate-reniform, dentate, often 3-lobed, lateral segments few and reduced, interspersed with minute leaflets; stem leaves subsessile to sessile, cuneate, blunt, deeply 3-lobed or 3-foliate. Petals bright yellow, up to 6 mm long, exceeding the sepal. Fruiting heads globose. Achenes minutely pubescent throughout, hirsute above; basal segment of style purplish, sparsely stipitate glandular, terminal segment finely pubescent (*G. perincisum* Rydb.).

Moist woods and openings; Alaska to Newfoundland, south to California, Minnesota, Michigan, and Vermont; east Asia. General except in the dry Interior.

Geum macrophyllum Willd.

4. *Geum rivale* L. — Pubescent, perennial herb. Rhizome short and thick. Stems erect to 50 cm tall. Radical leaves with 3–6 pairs of unequal lateral leaflets and a large suborbicular terminal leaflet, all more or less dentate; stem leaves few, much smaller, simple, or with few very much reduced lateral leaflets, often 3-lobed; stipules small. Flowers nodding at first, later erect, few in a narrow cyme. Sepals purple, triangular-lanceolate; epicalyx segments linear about one-third length of sepals. Petals dull orange-pink, somewhat spreading, about as long as the sepals, more or less spathulate with a long claw, retuse or emarginate. Stamens very numerous. Carpels free, hirsute; style jointed rather above the middle, lower portion glabrous, hooked, upper hairy, plumose at maturity.

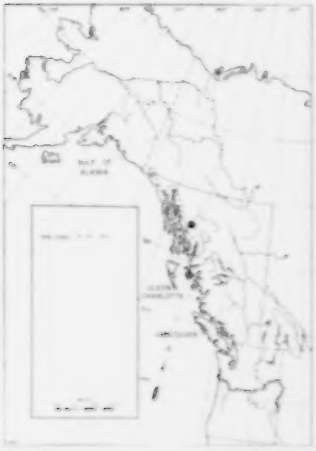
Marshes, stream sides, damp ground, generally in shade; British Columbia to Newfoundland, south to California, New Mexico, Missouri, Indiana, and Pennsylvania; Europe. Scattered in the Interior south from about Lat. 55°N.

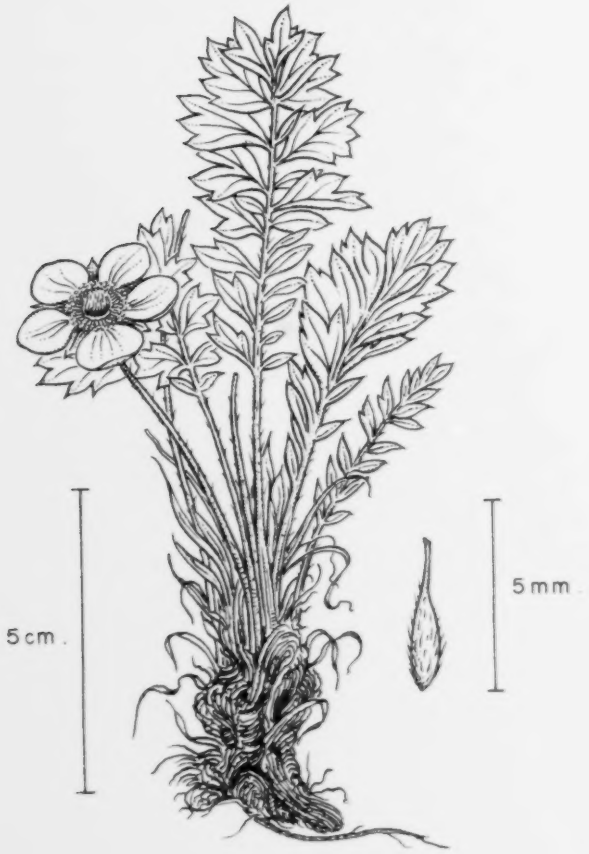


Geum rivale L.

5. *Geum rossii* (R. Br.) Sér.—Perennial herb with stout ascending rootstock densely covered with marcescent leaf bases. Radical leaves up to 10 cm long, erect, interruptedly pinnate; leaflets about 7 pairs, variously toothed, cuneate, glabrous to variously pubescent. Scape 1- or 2-flowered, erect with few much reduced, alternate leaves, sparsely pubescent to villous, short at anthesis but later up to 20 cm tall. Flowers showy, 2–3 cm in diameter. Sepals often purplish, shorter than the petals. Petals yellow, orbicular, spreading. Stamens numerous, about 60. Receptacle columnar. Achenes hirsute; style not much elongated, about as long as the achene, straight, glabrous.

Calcareous soil, alplands, arctic tundra; Alaska to Yukon, south to northeastern Washington, northeastern Oregon, Nevada, Arizona, and New Mexico; east Asia. In British Columbia known only from Yehiniko Lake (57°N.131°W.).

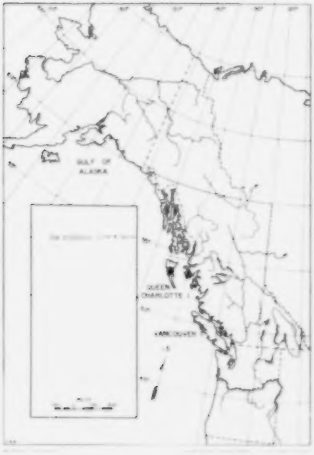


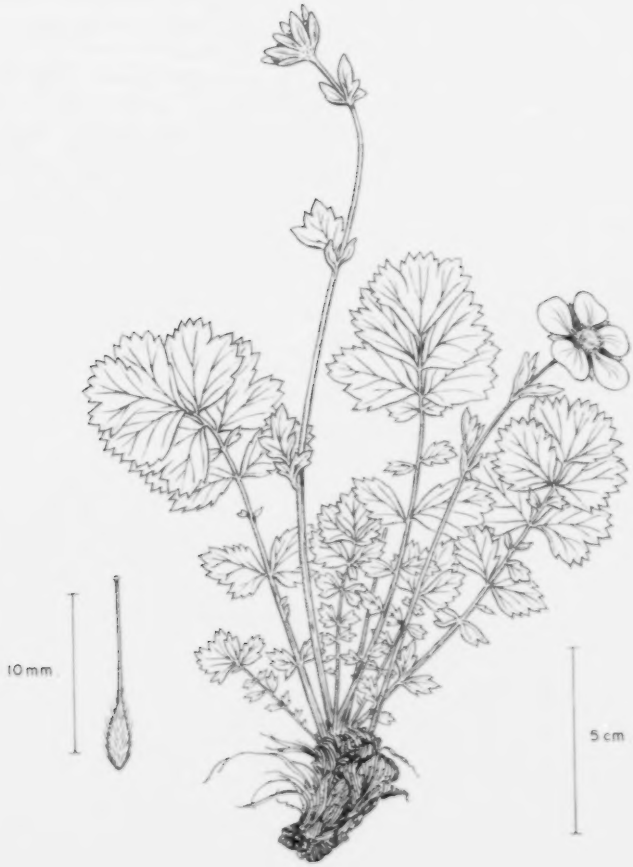


Geum rossii (R. Br.) Sér.

6. *Geum schofieldii* Calder & Taylor—Robust, perennial herb with woody caudex clothed with coarse fibres. Flowering stems up to 3 dm tall. Basal leaves rosulate, up to 20 cm long, lyrately pinnate with 5–7 major leaflets; terminal leaflets 3-lobed, 3-cleft, or entire. Bracteoles 5, ovate-lanceolate, slightly shorter than the triangular, erect sepals. Petals bright yellow, spreading, up to 15 mm long, broadly obovate, usually emarginate, longer than the sepals, soon deciduous. Achenes fusiform, sericeous, about 3.5 mm long; styles straight, glabrous, persistent, up to 10 mm long.

Wet rock crevices. Known only from Moresby and Graham Islands, Q.C.I.

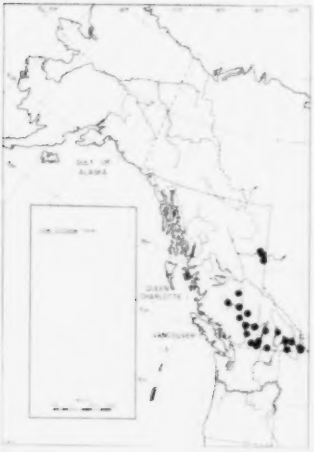




Geum schofieldii Calder & Taylor.

7. *Geum triflorum* Pursh—Low, soft hairy, perennial herb with thick, ascending rootstock. Flowering stem up to 4 dm tall. Radical leaves with many subequal, cuneate, deeply cut leaflets, hirsute on the veins beneath; stem leaves usually 2 or 4, opposite, small, pinnate with linear divisions. Flowers cymose, mostly nodding. Calyx turbinate, purplish; bracteoles linear, usually somewhat longer than the calyx lobes. Petals purplish to yellow, broadly elliptic, from as long as to much shorter than the bracteoles. Lower portion of style markedly plumose, long, slender, flexuous (*Sieversia triflora* R. Br.).

Open, dry, calcareous situations, alplands, gravelly soil, prairies; British Columbia to Newfoundland, south to California, New Mexico, Utah, Nevada, Nebraska, and Illinois. Common in the Interior to about Lat. 54° N. and in the Peace River District north to the Sikanni River.



Geum triflorum Pursh.

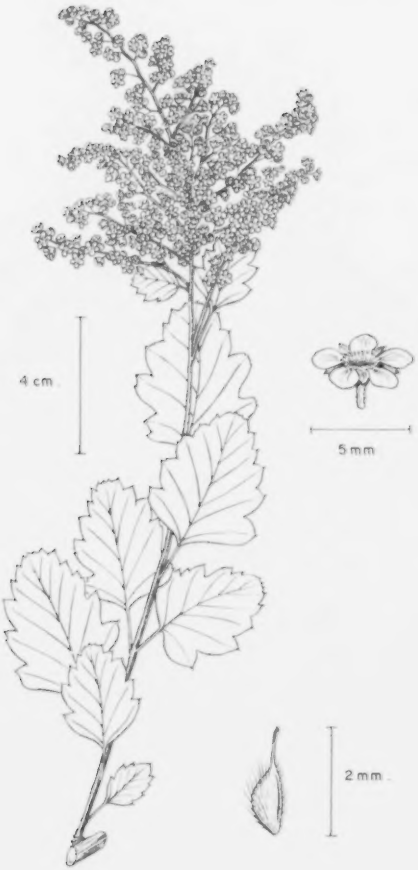
HOLODISCUS Maxim.

Low to tall shrubs. Leaves alternate, deciduous, estipulate, toothed to shallowly lobed. Inflorescence racemose or paniculate (ours); pedicels bracteolate. Flowers white or pinkish. Sepals and petals 5. Stamens about 20. Carpels generally 5, free; ovary superior, usually conspicuously hairy. Fruit an achene.

A small genus of half a dozen species of western North America, Mexico, Central America, and Colombia.

LEY, A. A taxonomic revision of the genus *Holodiscus* (Rosaceæ). Bull. Torrey Bot. Club **70**:275–288. 1943.

***Holodiscus discolor* (Pursh) Maxim.**—Slender shrub to 4 m branches often arching, bark brownish, exfoliating, young twigs more or less villous. Leaves to 10 cm long, blade broadly ovate to oval, truncate to cuneate but scarcely decurrent on the petioles, the shallow lobes or deep teeth often with secondary teeth, glabrate above, lanate to crisply pilose below; petioles 10–15 mm long. Inflorescence paniculate, usually ample, 2- to 3-times compound. Sepals about 1.5 mm long, obling- to ovate-lanceolate. Petals white



Holodiscus discolor (Pursh) Maxim.

to creamy, more or less elliptic, slightly longer than the sepals. Stamens about 20, filaments somewhat dilated at base. Carpels 5, copiously hirsute. Achenes about 2 mm long, hirsute (*Spiræa discolor* Pursh).

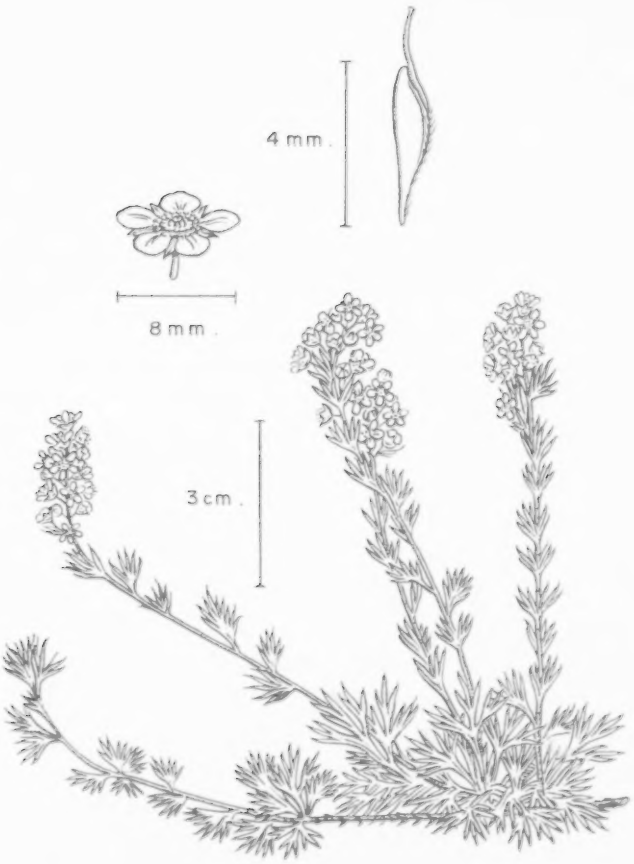
Open rocky soil, dry to moist woods; southern British Columbia to southern California, east to western Montana, northern Idaho, and northeastern Oregon. General, and often very conspicuous south of about Lat. 51°N. A variable species.

LUETKEA Bong.

Prostrate, mat-forming, subshrub. Leaves much dissected, evergreen. Inflorescence racemose. Flowers white, perfect, 5-merous, stamens about 20. Fruits several-seeded follicles dehiscing eventually along both sutures.

A monotypic genus of western North America.

***Luetkea pectinata* (Pursh) Ktze.**—Flowering stems up to 15 cm tall, glabrous or sparsely pilose in grooves of the stem, leafy. Leaves numerous, estipulate, about 1.5 cm long, usually crowded



Luetkea pectinata (Pursh) Ktze.

into basal tufts, evergreen, often marcescent, twice or thrise ternately dissected, divisions linear, acute, glabrate. Raceme up to 5 cm long; bracts ternate or the upper entire. Sepals about 2 mm long, ovate, glabrous, lobes broadly triangular, about twice as long as the hypanthium. Petals white, about 3 mm long, round-obovate to spatulate. Stamens and styles included. Follicles about 4 mm long, glabrous or sparsely long-pilose along the sutures (*Eriogynia pectinata* Hook., *Spiræa pectinata* T. & G.).

Moist or shaded situations, usually at high altitudes; Alaska south to northern California and in the Rocky Mountains to eastern Idaho and western Montana. With us general west of the Rockies.

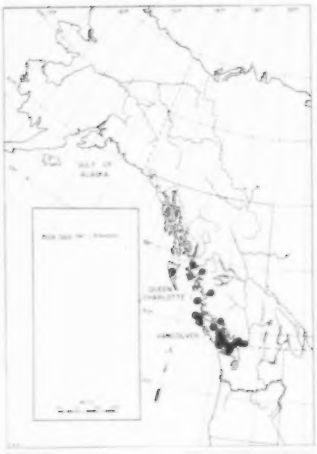
MALUS Miller

Trees or shrubs. Leaves alternate, simple, toothed or lobed. Flowers, perfect, white or pink, showy, in cymose or corymbose clusters on short spur-shoots. Hypanthium urn-shaped. Calyx 5-lobes. Corolla of 5 free petals. Stamens usually 15–20. Carpels 2–5, united at base. Fruit a pome, more or less depressed globose, flesh lacking groups of gritty stone-cells.

A small genus of about a dozen species of temperate North America and Eurasia, one species has given us the apple of commerce. By some botanists this genus, together with *Sorbus*, is included in the genus *Pyrus*.

***Malus fusca* (Raf.) Schneider**—Small shrubby trees up to 8 m tall, branches usually somewhat thorny through the hardening of spur-shoots, young twigs crisp pubescent. Leaves about 5 cm long, ovate-lanceolate, acute or acuminate, serrate, often with a lobe on one or both margins, deep green above, paler and more densely pubescent below. Inflorescence cymose or corymbose of 6–12 flowers, pedicels and hypanthium tomentose. Calyx lobes about 5 mm long, more or less reflexed, deciduous. Petals white to pink, up to 15 mm long, suborbicular. Stamens about 20, somewhat shorter than the petals. Styles usually 3, about the same length as the stamens. Fruits oblong, about 15 mm long, purplish-red to yellowish (*Pyrus diversifolia* Bong., *P. rivularis* Dougl., *P. fusca* Raf.).

Malus fusca (Raf.) Schneider

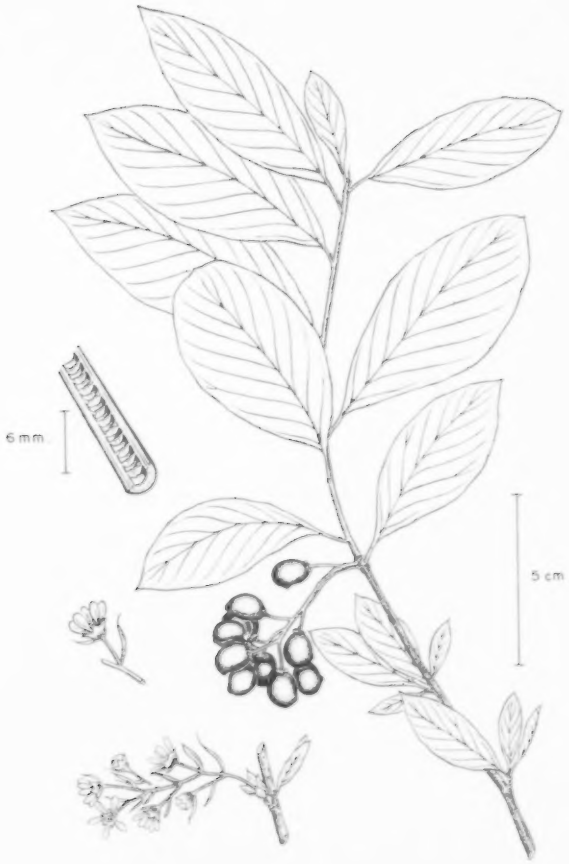


Moist places generally, often forming dense thickets; southern coastal Alaska to northern California, east to Coast Mountains and Cascades. In British Columbia essentially coastal, but throughout the larger islands and up the Fraser Valley to Hope.

OSMARONIA Greene

Shrubs with bitter bark and chambered pith. Leaves simple, entire, alternate, deciduous. Stipules small, fugacious. Flowers imperfect in nodding racemes, white and fragrant. Hypanthium more or less campanulate. Flowers 5-merous. Staminate flowers with spreading petals; stamens 15, inserted in 5's at three levels in the hypanthium. Pistillate flowers with shorter, erect petals; stamens of the same number as in the staminate flowers but the filaments shorter and the anthers probably always abortive. Fruit thin-fleshed drupes, usually 5 from a flower.

***Osmaronia cerasiformis* (T. & G.) Greene**—Shrub or small tree to 5 m tall. Leaves 5–10 cm long, oblong to oblanceolate, entire, thin, paler beneath, somewhat pubescent when young, gla-



Osmaronia cerasiformis (T. & G.) Greene.

brate in maturity. Inflorescence up to 10 cm long, nodding, terminating leafy branchlets of the season; bracts membranous, deciduous. Flowers greenish-white, opening as the leaves unfold. Calyx-lobes about 3 mm long approximately equalling the hypanthium. Petals about 6 mm long, obovate (shorter and narrower on pistillate flowers). Fruits usually 1 cm long, black and glaucous; flesh bitter (*Nuttallia cerasiformis* T. & G.).

Mostly in moist, open woods; southern British Columbia, south to northern California, west of the Cascades. Found only in the extreme southwest corner of the Province, from the vicinity of Vancouver southward and on Vancouver Island south from Duncan.

PHYSOCARPUS Maxim.

Shrubs with exfoliating bark. Leaves alternate, palmately lobed; stipules deciduous. Inflorescence a terminal corymb. Hypanthium campanulate, 5-lobed, lobes reflexed, stellate pubescent. Petals 5, white, spreading. Stamens numerous, inserted on the disk in the throat of the hypanthium. Carpels 1–5, more or less united at base. Follicles inflated, eventually dehiscent along both sutures.

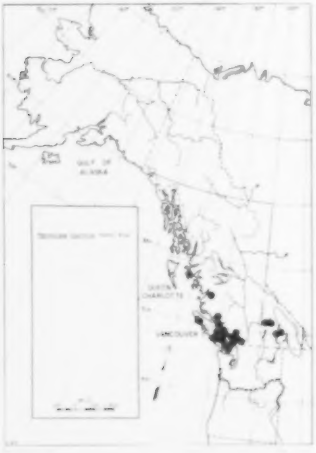
About 10 species, all North American, except 1 in Manchuria.

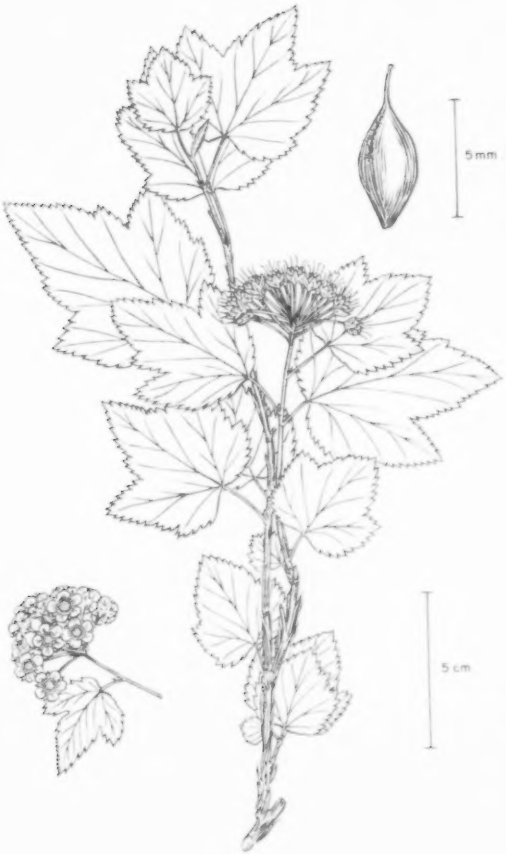
Follicles 3–5, glabrous except possibly along the sutures, united at the base ..... *P. capitatus*

Follicles 2, densely stellate pubescent, united for at least half the length of the ovary ..... *P. malvaceus*

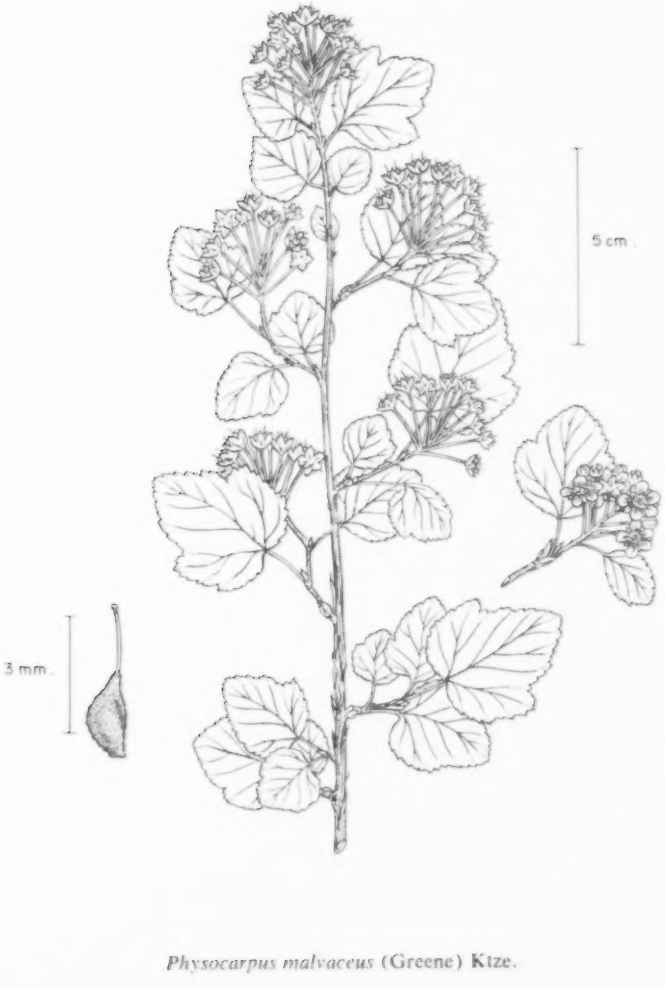
1. *Physocarpus capitatus* (Pursh) Ktze.—Shrub with erect or spreading branches, up to 4 m in height; branchlets angled, glabrous, or minutely stellate pubescent. Leaves up to 5 cm long, broadly round-ovate, 3–5 lobed, incised, truncate to cordate, dark green and sparsely stellate above, paler and abundantly stellate beneath; petioles about 2 cm long. Corymbs densely flowered, hemispherical. Pedicels, hypanthium, and calyx lobes densely stellate. Calyx lobes ovate-lanceolate, about the same length as the petals. Petals about 3.5 mm long, suborbicular. Stamens numerous, about the same length as the petals. Carpels 3–5. Follicles glabrous or pubescent along the ventral suture, united only at the base, about 10 mm long.

Damp situations, open woods, stream banks; southern Alaska to California, northern Idaho. Common in the coastal regions, also in the wet Interior from Shuswap Lake south.





Physocarpus capitatus (Pursh) Ktze.



Physocarpus malvaceus (Greene) Ktze.

2. ***Physocarpus malvaceus* (Greene) Kize.**—Shrub to 2 m. Very similar to *P. capitatus* but generally smaller in its vegetative parts. Generally more pubescent, particularly so on the ovaries which are densely greyish-stellate. Carpels 2 (with us).

Dry situations, rocky hillsides; southern British Columbia to eastern Oregon, east to southern Alberta, Montana, Wyoming, and Utah. Rare in the Okanagan Valley, much commoner in the Columbia Valley.

POTENTILLA L.

Herbs, rarely shrubs. Leaves compound, palmate, digitate, or pinnate. Flowers solitary or in cymes. Floral parts in 5's, rarely in 4's. Hypanthium flat, deeply 5-cleft with as many bractlets alternating with the calyx-lobes. Petals mostly obovate or obcordate, frequently yellowish (reddish-purple in *P. palustris*). Stamens 10–30, often 20. Carpels numerous, indefinite; styles lateral or more or less apical, articulated to the ovary. Fruit a group of achenes on a hemispheric or conic, dry receptacle, often enclosed by the persistent, accrescent calyx.

Over 300 species, mainly of the temperate Northern Hemisphere, several are in cultivation.

RYDBERG, P. A. A monograph of the North American Potentillæ. Mem. Dept. Bot. Columbia Univ. **2**:1–223. 1898.

CLAUSEN, J., D. D. KECK, and W. M. HIESEY. Experimental studies of the nature of species. II, *Potentilla glandulosa* and its allies. III, *Potentilla gracilis* and its allies. IV, *Potentilla drummondii* and *Potentilla breweri*. Carnegie Inst. Wash. Pub. **520**:26–195. 1940.

1. Petals reddish-purple; plants subaquatic with long, stout, spreading rhizomes ..... *P. palustris*
1. Petals yellow; habit and habitat various.
   2. Achenes hairy; shrubby perennials ..... *P. fruticosa*
   2. Achenes glabrous; herbs.
      3. Flowers solitary on naked peduncles; stolons present.
         Petioles, leaf rachises, and stolons sparsely appressed hairy to glabrous; mature achenes only slightly if at all wrinkled; coastal ..... *P. pacifica*
         Petioles, leaf rachises, and stolons densely to sparsely silky, usually with spreading hairs; mature achenes with 1 to several longitudinal wrinkles; east of the Coast Mountains ..... *P. anserina*
      3. Flowers usually several on more or less leafy stems.
         4. Style nearly basal, tapering to both ends, somewhat thickened and glandular just below the middle.
            Cyme short, dense; stem stout, 3–10 dm tall, densely viscid-villous; petals 6–8 mm long ..... *P. arguta*
            Cyme open or, if condensed, stem not stout or densely viscid-villous; petals shorter ..... *P. glandulosa*
         4. Style either filiform or thickened at base, subapically attached to the ovary.
            5. Flowers many in very leafy cymes.
               6. Annuals, biennials, or short-lived perennials; stamens usually 10; style tapering from the base but scarcely glandular-warty below.
                  7. Mature achenes with thickened wedge-shaped appendage, nearly or quite as large as the rest of the fruit; lower leaves usually 5- to 9-foliate. ..... *P. paradoxa*
                  7. Mature achenes lacking a conspicuous appendage; lower leaves usually 3- sometimes 5-foliate.
                     8. Leaves pinnate with 2 approximate pairs of leaflets, the upper leaves (seldom all) ternate; stems lanate, eglandular ..... *P. rivalis*
                     8. Leaves all ternate (the lower rarely 5-foliolate).
                        Petals much shorter than the sepals; leaflets broadly obovate; stems hirsute below, often with glandular hairs ..... *P. biennis*

Petals nearly equalling the sepals; leaflets oblong-cuneate; stems stiffly hirsute below with spreading pustular-based hairs. ..... *P. norvegica*

6. Perennial, usually with a well-developed rootstock; stamens about 20; style thickened and glandular-warty at base; teeth of the leaves oblong or linear, margin revolute, greenish above white lanate below ..... *P. argentea*

5. Cymes not very leafy, few-flowered; stems from a branched rootstock.

9. Leaves digitately compound.

10. Leaves 5–9 foliolate.

11. Plants usually less than 3 dm tall; stem simple, erect, few-flowered; leaves usually greenish on both surfaces, never tomentose ..... *P. diversifolia*

11. Plants usually more than 3 dm tall.

Leaves greenish above, densely white tomentose beneath except in the northern var. *glabrata* (Lehm.) C. L. Hitchc.; stamens 20; mature achenes smooth, greenish ..... *P. gracilis*

Leaves green on both sides; stamens about 30; mature achenes prominently reticulate, brownish ..... *P. recta*

10. Leaves 3-foliolate.

12. Leaves not tomentose.

13. Leaflets merely toothed.

Stem usually less than 1 dm tall, decumbent; leaflets obovate, pilose; petals 5–8 mm long ..... *P. hyparctica*

Stems 1–3 dm tall, erect; leaflets cuneate, flabelliform; glabrous or very sparsely pubescent, petals 8–10 mm long ..... *P. flabellifolia*

13. Leaflets divided to the middle or lower.

Leaflets very small (3–8 mm long), divided to about the middle into linear-oblong, obtuse lobes; petals small, 2–4 mm long ..... *P. elegans*

Leaflets larger, divided to the base into linear lobes; petals 5–8 mm long ..... *P. biflora*

12. Leaves more or less tomentose beneath; styles usually warty or papillate at base.

14. Basal leaves in part 5-foliolate, dissected halfway to the midrib ..... *P. quinquefolia*
14. Basal leaves all 3-foliolate.
15. Plants generally densely villous throughout; persistent stipules very dark; flowers usually more than 2 cm in diameter; bracteoles elliptic-oval ..... *P. villosa*
15. Plants not densely villous throughout; stipules usually lighter; flowers usually less than 2 cm in diameter; bracteoles linear to linear-lanceolate.
16. Petioles tomentose but lacking long or soft, spreading, or straight hairs ..... *P. nivea*
16. Petioles villous or pilose, not tomentose, and with spreading or straight hairs.
17. Inflorescence cymose usually with more than 2 flowers; petioles with short puberulence ..... *P. hookeriana*
17. Inflorescence 1- to 2-flowered; petioles lacking short puberulence ..... *P. ledebouriana*

9. Leaves pinnately compound.
18. Style not longer than the mature achene, thickened and glandular below; leaves more or less tomentose beneath ..... *P. pensylvanica*
18. Style much longer than the mature achene, filiform, not glandular roughened below.
19. Leaflets obovate-cuneate, 2–5 cm long, dissected usually about half way to the midvein ..... *P. drummondii*
19. Leaflets various but usually smaller and narrower, sometimes dissected nearly to the midvein, frequently white-hairy.
20. Leaflets usually oblong, greyish tomentose beneath, rarely cut more than half way to the midvein ..... *P. hippiana*
20. Leaflets more or less divided nearly to the base into narrow linear segments about 1 mm wide, hirsute but not tomentose.
21. Basal leaves tufted, with petioles much shorter than the blades; leaf-

lets 7–15, linear-oblong, obtuse; petals obcordate, about one-third longer than the sepals ..... *P. ovina*

21. Basal leaves not tufted, with petioles much longer than the blades; leaflets 5–7, linear-acute, petals more or less orbicular, only slightly longer or subequalling the sepals ..... *P. multifida*

1. ***Potentilla anserina*** L.—Herbaceous perennial with long, many-jointed runners, together with the peduncles, petioles, and rachises more or less pubescent with ascending or loosely spreading hairs. Leaves all basal, 1–2 dm long, spreading, pinnate with larger leaflets interspersed with smaller; leaflets oblong to obovate, sharply serrate, silky tomentose beneath, lustrous at least when young, varying from green and glabrous above to silky on both sides. Peduncles up to 10 cm tall; bracteoles often somewhat cleft. Sepals broadly ovate, about 5 mm long. Petals rich yellow, oval, 8–10 mm long. Achenes thick-ovoid, corky with a dorsal groove.

Open, damp places generally, particularly the margins of streams and ponds, mudflats; Yukon to southern California (east of Coast Mountains), east to Atlantic Coast; Eurasia. Known only in the Interior, particularly from the Cariboo District south.

Potentilla anserina L.

2. ***Potentilla argentea*** **L.**—Stem depressed or ascending, up to 4.5 dm long, paniculately branched above. Basal leaves long petioled, deeply palmately 5 (7) lobed; lobes cuneate-oblong, almost pinnatifid, margins often revolute, densely white-tomentose beneath; upper leaves short petioled to sessile, smaller, 3–5 lobed; stipules lanceolate, entire, up to 7 mm long. Cyme compound, many flowered and leafy, white-woolly. Sepals 2–5 mm long, ovate-lanceolate, sericeous. Petals yellow, obovate-cuneate, equalling or slightly shorter than the calyx lobes. Stamens about 20. Carpels numerous; style papillose-warty at base.

Dry, open ground; naturalized from Europe. Locally established in the dry parts of the Interior, particularly in the Kootenay Valley.

Potentilla argentea L.

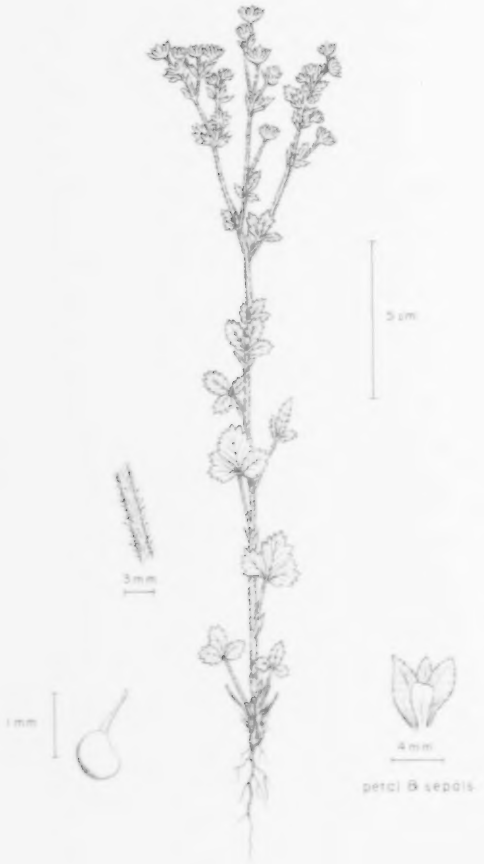
3. *Potentilla arguta* Pursh—Stems up to 10 dm tall, glandular-pubescent. Basal leaves mostly with 7–9 leaflets; petioles 2–10 cm long, viscid-villous; leaflets 3–5 cm long, uppermost obovate, lower smaller, orbicular, coarsely doubly serrate or even deeply incised, short pubescent and glandular-puberulent. Cyme many-flowered, narrow and compact, more or less flat-topped, lateral branches erect. Bractlets about 5 mm long, linear-lanceolate. Sepals ovate-lanceolate, acute, about the same length as the bractlets when in anthesis, longer in fruit. Petals pale yellow to whitish, oblong-obovate, about 6 mm long. Stamens usually 25. Styles fusiform, slender, glandular-roughened near the middle. Achenes about 1 mm long, slightly beaked (*P. convallaria* Rydb.).

Mountain meadows; Yukon to Quebec, south to Oregon, Arizona, New Mexico, Oklahoma, Pennsylvania, and New Jersey. General east of the Coast Mountains.

Potentilla arguta Pursh.

4. *Potentilla biennis* Greene—Annual or biennial. Stems up to 5 dm tall, simple, densely pubescent and glandular; branches ascending. Leaves mostly cauline, 3-foliate, reducing upwards; leaflets cuneate-obovate, rather deeply crenate-serrate; stipules oblong-lanceolate, mostly entire. Cyme leafy bracteate, many flowered. Hypanthium and calyx glandular-pubescent, appressed hirsute; bractlets shorter and narrower than the sepals. Sepals erect, ovate-triangular, considerably longer than the hypanthium, markedly accrescent. Petals yellow, cuneate-obovate, about half as long as the sepals. Stamens usually 10. Carpels numerous; style terminal, tapering from the base. Achenes pale, smooth.

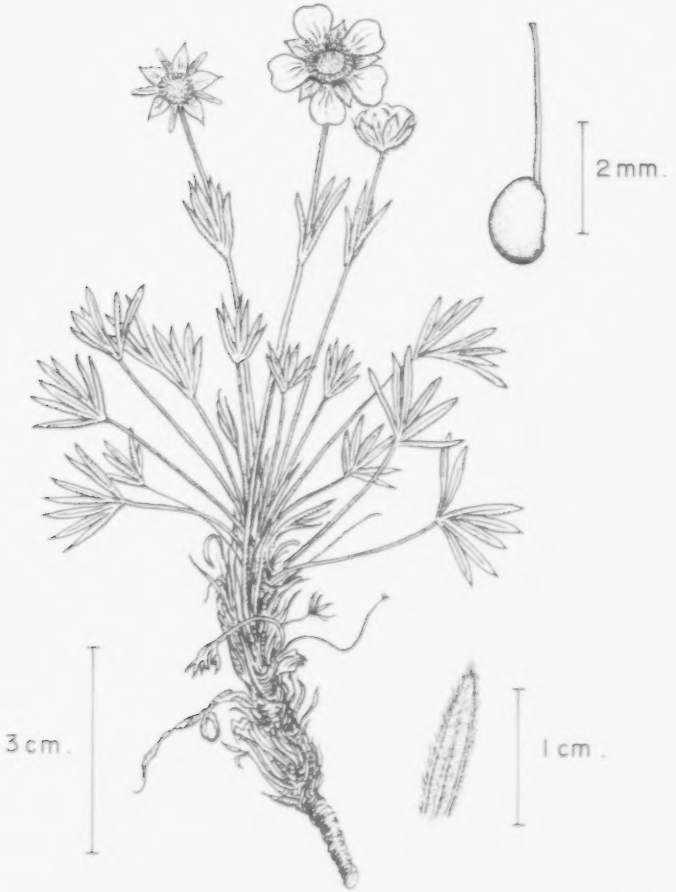
Open, often damp, situations; British Columbia to Baja California, east to Saskatchewan, Dakotas, Colorado, and Arizona. Not common, found in the dry Interior.



Potentilla biennis Greene

5. *Potentilla biflora* Willd.—Perennial, caespitose herbs. Stems up to 15 cm tall. Leaves all basal, ternate with leaflets divided into 2–5 linear segments, margins revolute, midrib prominent, villous-hirsute, upper surface becoming glabrate with age; stipules often purplish, free tips awl-shaped, villous-hirsute at first, later glabrate. Flowering branches scape-like, usually erect, up to 10 cm long, 1–3 flowered. Hypanthium villous; bractlets oblong, 4 mm long, villous on margins at first, later often glabrous. Sepals slightly longer, ovate, acute. Petals broadly obcordate, 5–9 mm long. Receptacle villous. Styles long, filiform.

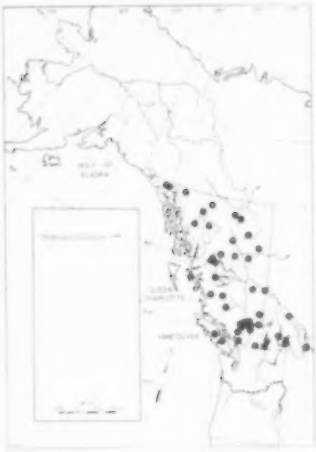
Stony alpine regions; east Asia to mouth of Mackenzie River, south to northern British Columbia. Known with us only from Summit Pass on the Alaska Highway.



Potentilla biflora Willd.

6. *Potentilla diversifolia* Lehm.—Perennial with branched caudex and thickened rootstock. Stems slender, up to 3.5 dm tall, few leaved. Leaves mostly basal, digitate or pinnate; leaflets oblong-lanceolate, cuneate, more or less deeply toothed or lobed, division triangular-lanceolate to linear, ranging from sparsely strigose to sericeous or villous, both sides of the leaf being similar, cauline leaves only 1 or 2; stipules broadly lanceolate, entire. Cyme open, several flowered, flowers with peduncles up to 3 cm long. Bracteoles linear-lanceolate, shorter than the calyx lobes. Calyx lobes about 5 mm long, triangular-lanceolate, villous-sericeous, eglandular. Petals yellow, obcordate, definitely longer than the calyx lobes. Stamens 20. Style subapical, slender, as long as or longer than the achenes. Achenes dark, smooth or slightly reticulate (*P. dissecta* Nutt.).

Open alpine or montane situations; southern Alaska and Yukon, south to California, east to Saskatchewan, Utah, and New Mexico. Common in all our mountainous areas, except on Vancouver Island, where it is rare.



Potentilla diversifolia Lehm.

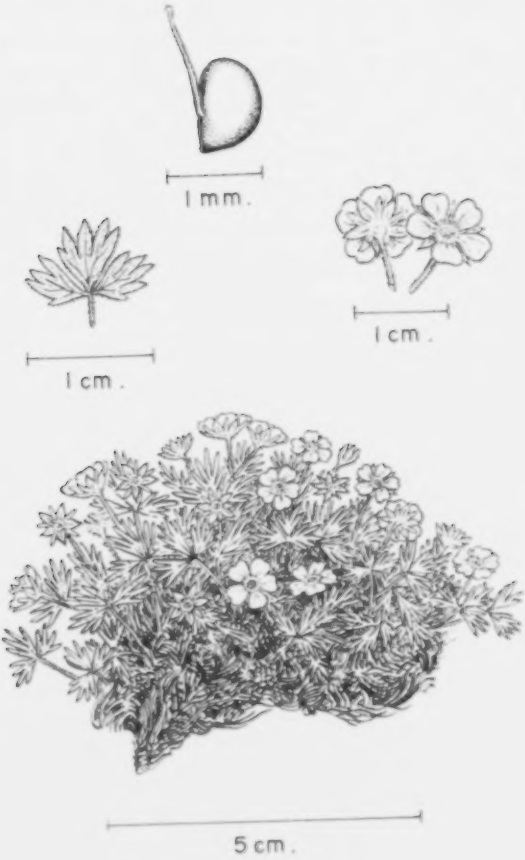
7. *Potentilla drummondii* Lehm. — Perennial with short, stout caudex. Stems erect, up to 6 dm tall, sparsely long hirsute to glabrate, greenish, eglandular. Basal leaves pinnate, leaflets 5–9, obovate, cuneate, deeply and incisely toothed, teeth lanceolate, glabrous above, becoming glabrate below; petioles equal to or longer than the blades; stipules ovate to lanceolate, mostly entire; cauline leaves usually 2 or 3. Cyme open, many flowered. Calyx shallowly saucer-shaped, sparsely hirsute; bracteoles lanceolate, slightly shorter than the calyx lobes. Calyx lobes ovate, accrescent. Petals yellow, obcordate, longer than the calyx lobes. Stamens about 20. Carpels numerous; styles subapical, slender, much longer than the mature achene. Achenes olive-brown, smooth.

Open situations, mostly at high altitudes; British Columbia to northern California, and Rocky Mountains of Alberta. Northern limit in British Columbia is about Lat. 55°N.

Potentilla drummondii Lehm.

8. *Potentilla elegans* Cham. & Schlecht.—Perennial herb, tufted from branched and crowded caudex. Stems very slender, less than 5 cm tall. Basal leaves ternate; petioles up to 2 cm long, sparsely villous; stipules brown, ciliate, free tip short, acute; leaflets obovate, less than 8 mm long, pinnatifid to about the middle, segments linear-oblong, short pilose and glandular beneath. Flowers solitary. Bractlets oblong, obtuse, shorter than the sepals. Sepals about 3 mm long, oblong, somewhat purplish, pilose, and finely glandular. Petals pale yellow, obcordate, somewhat longer than the sepals. Stamens 20. Styles short.

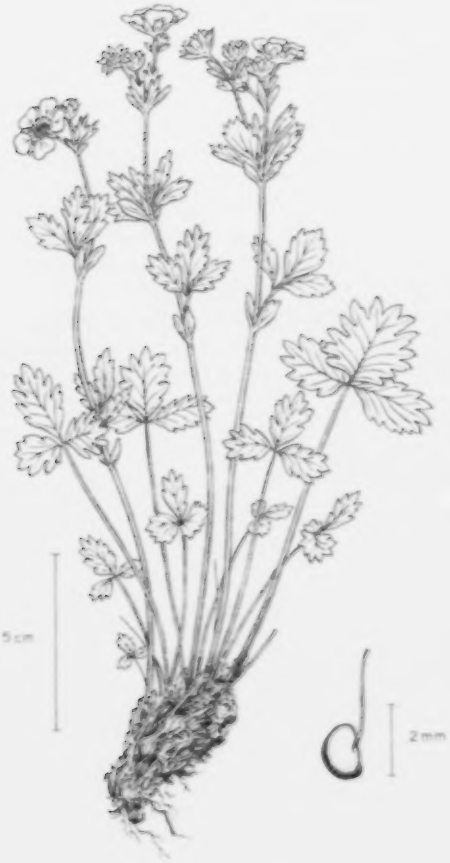
Rocky slopes and crevices at high altitudes; east Asia, Alaska, and northern British Columbia. Known with us only from Cassiar.



Potentilla elegans Cham. & Schlecht.

9. *Potentilla flabellifolia* Hook. — Herbaceous perennial from a branched and creeping caudex. Stems up to 3 dm tall, essentially glabrous below, sparsely pubescent above. Basal leaves ternate, thin, glabrous or sparsely pubescent, green; leaflets broadly obovate to flabelliform, cuneate, deeply incised serrate with obtuse teeth, entire toward the base; petioles often very long and slender; stipules broad-elliptic, obtuse; cauline leaves 1 or 2. Cymes few flowered, leafy bracteate. Bractlets oval, more or less equal in length to the sepals, rounded, entire or 2- or 3-toothed at the tip. Sepals ovate, acute. Petals yellow, obcordate, half again as long as the sepals. Stamens usually 20, inserted on the edge of a dark-coloured disk. Styles filiform, subapical, longer than the smooth darkish achene.

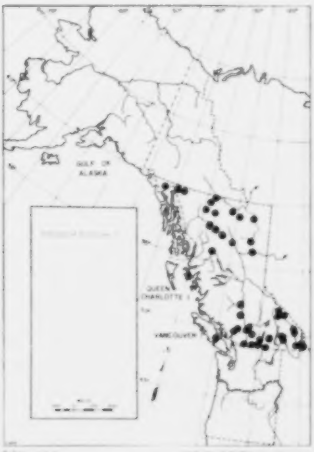
Alpine meadows and slopes; southern British Columbia and southwestern Alberta, south to central California, Montana, and Idaho. Found only in the Coastal Mountains from Garibaldi south.



Potentilla flabellifolia **Hook.**

10. ***Potentilla fruticosa*** **L.**—Shrub up to 1.5 m. Branches silky pilose when young, soon glabrate, in age with brown, shreddy bark. Leaves numerous, pinnate with 1–3 pairs of leaflets, generally with 2 approximate pairs, more or less greyish-silky above, whiter silky beneath; leaflets oblong to linear, acute, entire, margins often revolute; stipules ovate to ovate-lanceolate, acuminate, scarious. Flowers solitary or in small open, terminal cymes. Calyx soft-hairy, eglandular; bractlets linear-oblong, generally slightly longer than the broadly ovate, acuminate sepals. Petals yellow, orbicular, as much as twice as long as the sepals. Stamens as many as 30. Carpels numerous; styles slender at base but thickened upwards, midlaterally attached to the strongly hirsute ovary. Achenes light brown, ovoid, strongly hirsute.

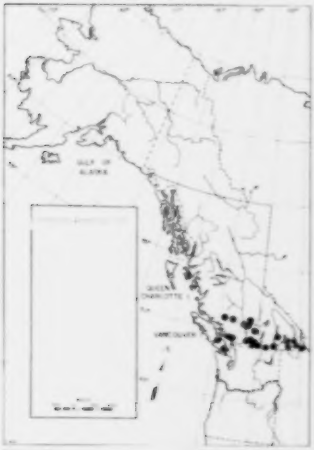
Moist, open situations, particularly peat bogs, tundra and high montane meadows; Alaska to California, east to Labrador, Nova Scotia, New Jersey, Pennsylvania, Iowa, Colorado, and New Mexico; Eurasia. Generally common, but apparently not so on Vancouver Island.



Potentilla fruticosa **L.**

11. ***Potentilla glandulosa*** **Lindl.**—Perennial from a branched caudex. More or less glandular throughout. Stems several, unbranched to the inflorescence, erect to 5 dm tall, very variable as to pubescence, ranging from glabrate to densely glandular-pubescent throughout. Leaves mostly basal, long petioled, pinnate with 5–9 leaflets; leaflets flabellate-cuneate to oblong-ovate, sharply serrate, glandular-pubescent to glabrate; cauline leaves few, reduced; cauline stipules ovate, acuminate, often deeply toothed, basal stipules laneolate. Cyme bracteate, more or less spreading, few- to many-flowered. Hypanthium usually glandular-hirsute; bractlets linear-lanceolate, shorter than the sepals; sepals triangular-ovate, acuminate, markedly accrescent. Petals yellow, obovate, subequal to the sepals or slightly longer. Stamens 25 or more. Styles fusiform, attached well below the middle of the ovary.

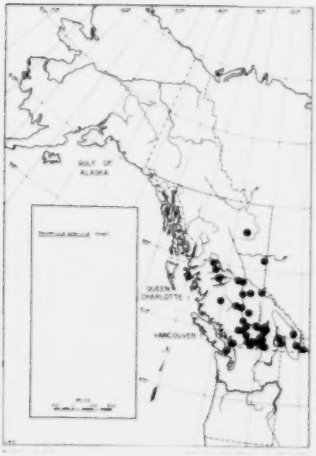
Open woods, plains, and hillsides; British Columbia to northern Baja California, east to southwestern Alberta, central Montana, Wyoming, and Colorado. General in the extreme southern Interior, rare on the Coast.

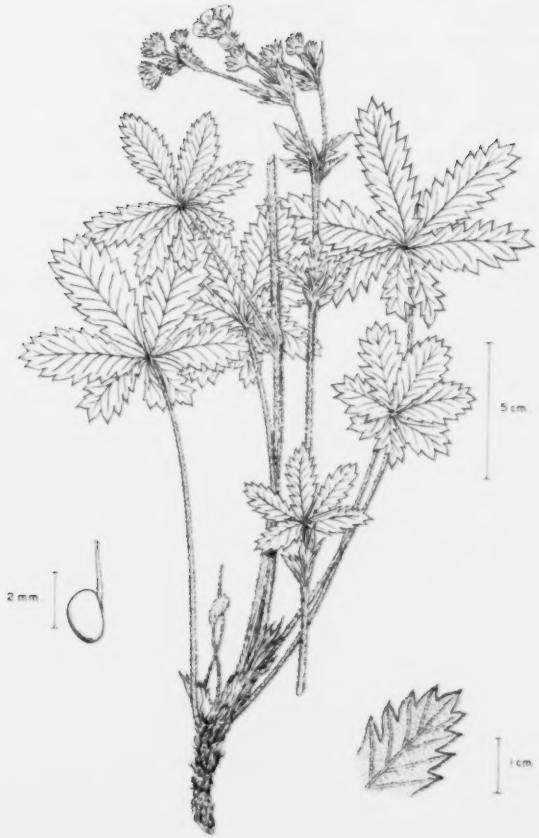


Potentilla glandulosa Lindl.

12. *Potentilla gracilis* Dougl. — Perennial with stout, branched caudex. Stems several, up to 8 dm tall, usually erect. Basal leaves numerous, blades mostly digitate, leaflets very variable in shape, serrations, and pubescence, from cuneate-oblanceolate to oblong-elliptic, crenate-serrate to deeply dissected, sometimes concolorous but mostly definitely paler beneath, from nearly glabrous to rather densely tomentose; cauline leaves 1 or 2; petioles several times longer than the leaflets; stipules lanceolate, up to 2 cm long, entire or toothed. Cyme many-flowered, conspicuously bracteate, open, more or less flat-topped. Calyx cupshaped, very variable in pubescence, markedly accrescent in fruit about as broad as long; bracteoles lanceolate, shorter than the broadly lanceolate calyx-lobes. Petals yellow, obcordate, longer than the sepals. Stamens 20. Carpels numerous; styles subapical, slender, slightly verrucose at base, about as long as the mature achene. Achenes greenish-drab, smooth (*P. nuttallii* Lehm., *P. flabelliformis* Lehm.).

Various lowland habitats, occasionally in montane situations as well; Alaska to Baja California, east to Saskatchewan, the Dakotas, Nebraska, New Mexico, and Arizona. With us general but more common east of the Coast Mountains.

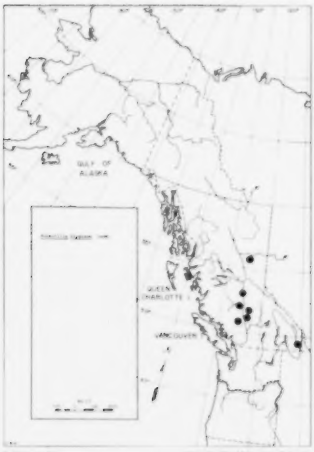


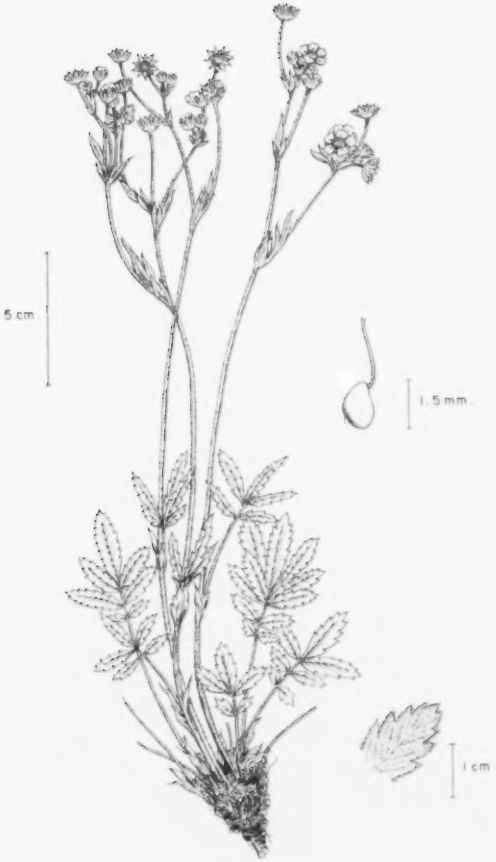


Potentilla gracilis **Dougl.**

13. *Potentilla hippiana* Lehm. — Caespitose with brown-scaly, branched caudex. Stems and leaves densely white tomentose or silvery silky through, eglandular. Basal leaves pinnate with 5–11 cuneate-oblong, incisely toothed leaflets, the upper surface of which may be green; stipules ovate to lanceolate, entire. Inflorescence open, markedly bracteate, cymose with strongly ascending branches; bractlets and calyx lobes subequal in length; bractlets lanceolate, narrower than the sepals, acute; sepals ovate-lanceolate, acute. Petals yellow, obovate, rounded or retuse, slightly longer than the sepals. Stamens usually 20. Style subapically attached, filiform, considerably longer than the achene. Achenes smooth.

Plains and dry slopes; southern British Columbia to New Mexico and Arizona, east to Saskatchewan, Dakotas, and Nebraska. Limited to the Cariboo region and the Kootenay Valley.

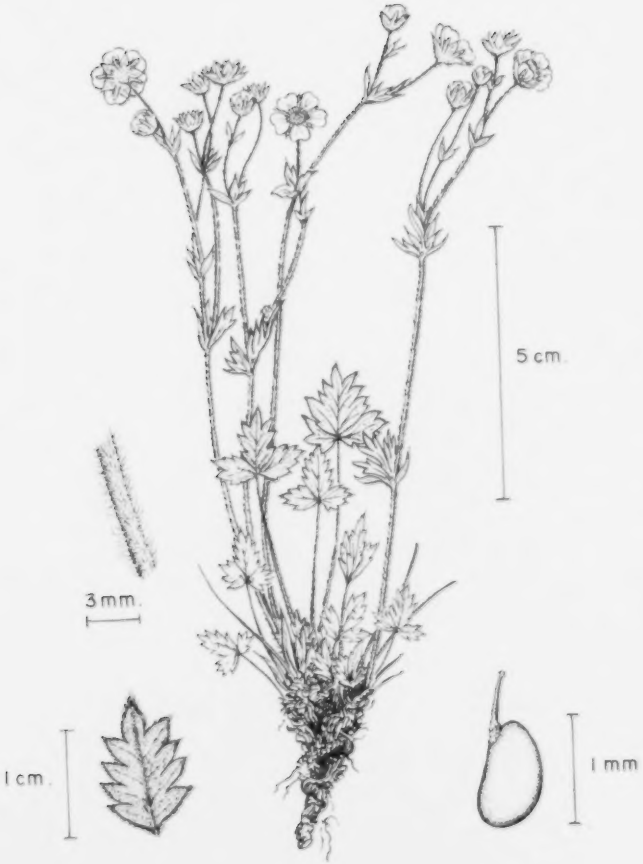




Potentilla hippiana Lehm.

14. *Potentilla hookeriana* Lehm.—Perennial. Caudex and taproot slender. Stems few, up to 3 dm tall. Basal leaves few, mostly ternate but sometimes with 1–3 extra leaflets; leaflets obovate as much as 4 cm long, deeply cut to near the midrib, lobes oblong, silky-villous to glabrate above, densely tomentose below; petioles 1–5 cm long, short puberulent with long, spreading, or somewhat curly, soft hairs; stipules about 15 mm long, persistent, brown, free tips lanceolate, usually ciliate on the margin and pubescent on the midrib below; stem leaves reduced upward. Stems rather crisp puberulent, often with long soft hairs. Inflorescence cymose, 2- to few-flowered. Pedicels up to 3 cm long. Hypanthium densely silky-villous; bractlets linear-lanceolate, silky-villous, somewhat shorter than the sepals. Sepals lanceolate, silky-villous. Petals yellow, broadly obcordate, 5–7 mm long, about as long as the sepals. Stamens usually 20; style subapically attached, thickened at base, papillate on lower half. Achene smooth, greenish-straw-coloured.

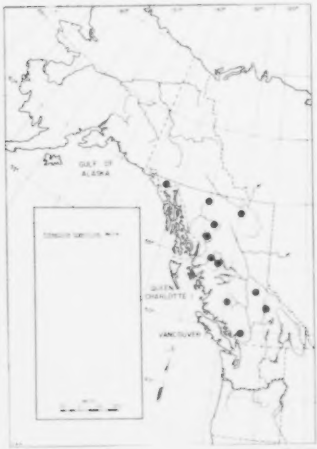
Gravelly places in alpine regions; Alaska to Saskatchewan, south to British Columbia and Alberta, also in Siberia. Not common, known from as far south as Penticton.

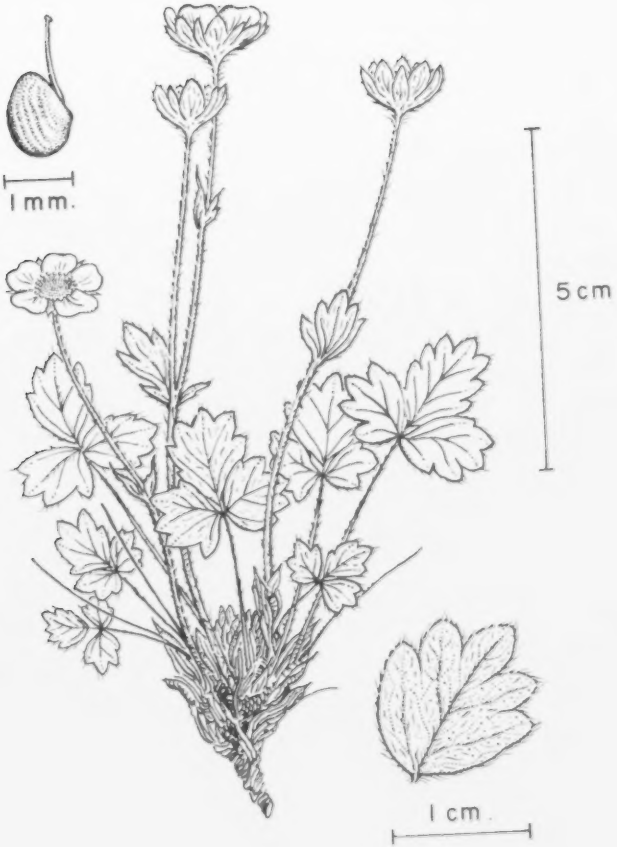


Potentilla hookeriana Lehm.

15. *Potentilla hyparctica* Malte. — Caespitose perennial. Caudex stout with branches covered with marcescent, brownish stipules. Stems usually less than 10 cm tall, more or less hirsute or pilose throughout. Basal leaves ternate; leaflets broadly obovate, cuneate, coarsely toothed or lobed, sparingly hirsute or glabrate above, sparingly to moderately soft-hirsute below; petioles 2–3 times as long as the blade; stipules persistent, scarious, brown, cauline leaves sessile, reduced. Flowering stems 1–3 flowered. Hypanthium, bracteoles, and sepals more or less pilose; bracteoles oblong to lanceolate, shorter than the calyx lobes. Calyx lobes ovate, about 6 mm long. Petals yellow, broadly obcordate, usually longer than the sepals. Stamens normally 20. Carpels numerous; style subapical, filiform, shorter than the achene. Achenes greenish, with a few longitudinal wrinkles when mature (*P. emarginata* Pursh).

Alpine meadows and screes, tundra; Alaska to Greenland, south to British Columbia; arctic Eurasia. Scattered and rare, mostly on Coast Mountains.

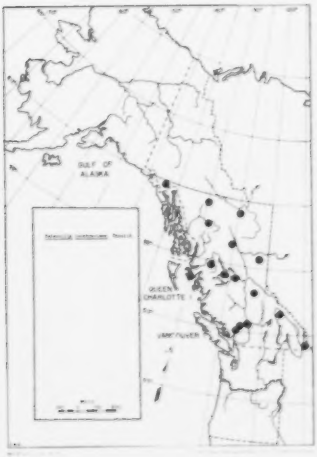


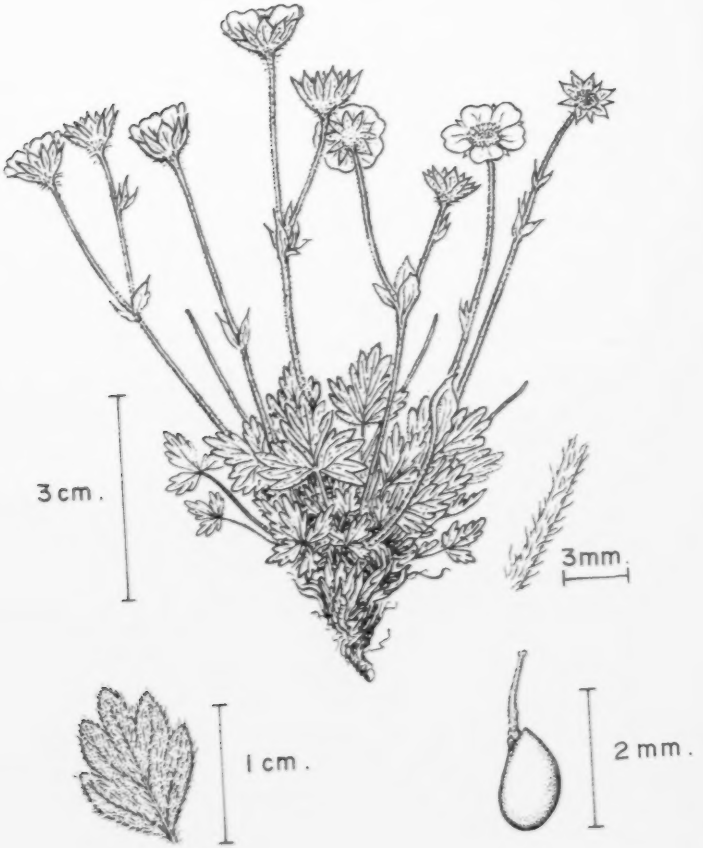


Potentilla hyparctica Malte.

16. *Potentilla ledebouriana* Porsild. — Caespitose, herbaceous perennial with branching caudex and marcescent stipules. Flowering stems usually less than 5 cm tall. Basal leaves ternate; leaflets rhombic-obovate, broadly cuneate, about 1.5 cm long, deeply toothed, teeth oblong-lanceolate, upper surface silky or glabrate, lower densely lanate, together with long, villous hairs; petioles usually shorter than the blades, spreading pilose but not tomentose; stipules persistent, dark brown; cauline leaves 1 or 2, sessile, reduced. Cymes 1- or 2-flowered; hypanthium densely villous; bractlets linear-oblong, subequal to much narrower than the lanceolate calyx lobes. Petals yellow, obcordate, much longer than the calyx lobes. Stamens usually 20. Styles papillate and somewhat swollen at the base (*P. uniflora* Ledeb.).

Rocky slopes and ledges in alpine and arctic regions; Alaska to southern British Columbia, south in Rocky Mountains to Colorado; northeast Asia. To be expected in alpine regions generally; apparently absent from Vancouver Island.

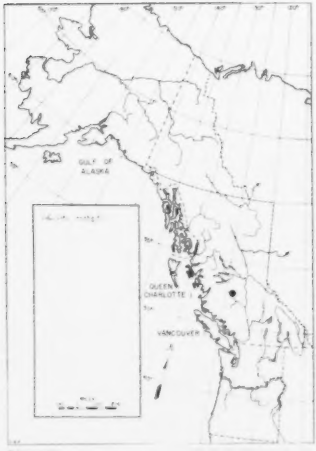




Potentilla ledebouriana Porsild

17. *Potentilla multifida* L.—Herbaceous perennial. Caudex short, thick, dark brown. Stems decumbent or erect up to 3 dm tall. Lower leaves pinnately divided, leaflets 5–7, margins revolute, appressed strigose to glabrate above, tomentose beneath, segments linear, acute. Stem leaves similar but reduced, stipules prominent, ovate with long-attenuate tips. Calyx with soft, white hairs; bractlets linear, almost as long as the ovate-triangular sepals. Petals yellow, orbicular, slightly longer than the sepals. Style slender, not warty thickened at the base.

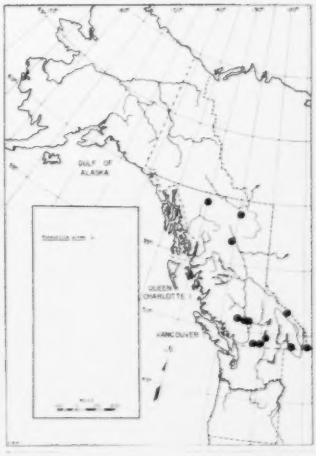
Dry situations in open ground; Eurasia to the eastern Arctic. Known with us only by a single collection from the Chezacut area.

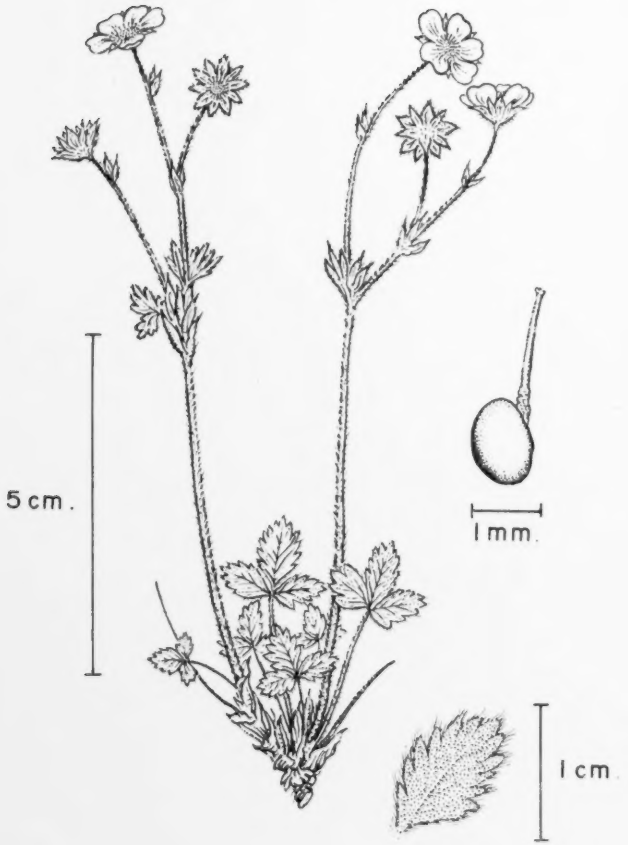


Potentilla multifida L.

18. *Potentilla nivea* L.—Herbaceous perennial from slender caudex. Stems variable up to about 3 dm tall. Basal leaves few, usually ternate, but sometimes with extra leaflets; leaflets obovate to oblong-cuneate, coarsely toothed or cleft into oblong lobes, silky-villous to glabrate above, markedly tomentose beneath; stipules brown, persistent; cauline leaves sessile, reduced upwards; petioles tomentose with spreading or appressed hairs. Cyme 1- to several-flowered; peduncle and pedicels thinly tomentose. Hypanthium usually white-villous; bractlets linear-lanceolate, shorter than the ovate-lanceolate sepals. Petals yellow, obcordate, longer than the sepals. Stamens 20. Styles more or less granular-papillate below. Achenes smooth (*P. nipharga* Rydb.).

Open alpine or montane slopes, arctic tundra; Alaska to Quebec, south to British Columbia, and in the Rocky Mountains to Colorado, Utah, and Nevada; Greenland; Eurasia. General but rare, apparently not present on Vancouver Island.

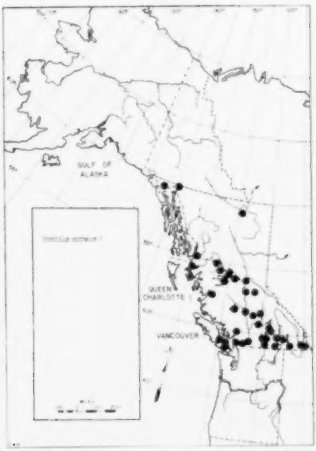


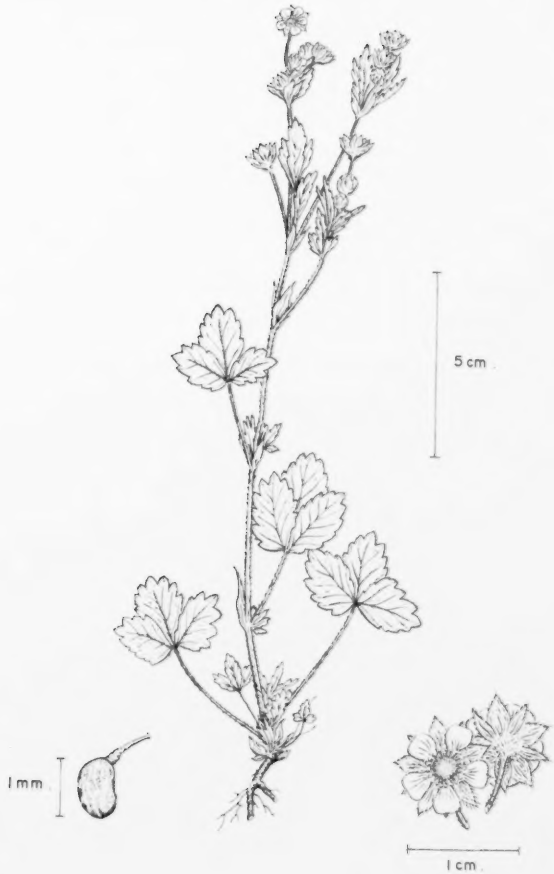


Potentilla nivea L.

19. *Potentilla norvegica* L. — Annual, biennial, or short-lived perennial. Stems erect, simple or branching, up to 6 dm tall, hirsute below, coarser hairs pustulate, eglandular. Leaves mainly cauline, 3-foliate; leaflets ovate to narrowly oblong above, strongly crenate serrate, hirsute; stipules ovate, entire to strongly toothed. Cymes leafy-bracteate, rather compact. Calyx strigose-hirsute, eglandular to sparsely glandular-puberulent. Sepals erects, lanceolate, about 5 mm long, markedly accrescent in fruit; bracteoles subequal in length but narrower. Petals yellow, broadly obovate, retuse, shorter than the sepals. Stamens commonly 20. Carpels numerous; style terminal, considerably thickened at base. Achenes brown, strongly lengthwise wrinkled (*P. monspeliensis* L.).

Damp, often waste, ground; widespread in North America from Alaska to California and eastward; Eurasia. General throughout but not so common west of the Coast Mountains, where it has perhaps been introduced.

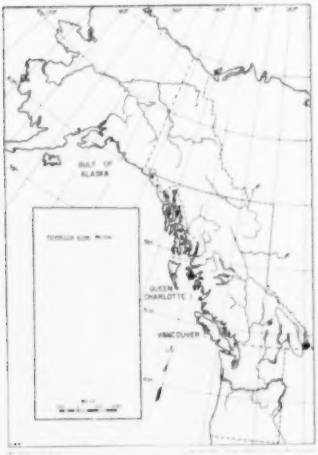




Potentilla norvegica **L.**

20. ***Potentilla ovina*** **Macoun**—Subcaespitose perennial from a branched caudex. Stems erect to spreading, usually less than 1 dm tall, strigose. Leaves mostly basal, crowded, up to 4 cm long, petioles about as long as the blade, appressed hoary, at least when young, pinnate with many crowded leaflets; leaflets deeply cleft into narrow, linear-oblong, obtuse lobes. Inflorescence 3–6 flowered, open. Hypanthium hirsute; bractlets shorter and considerably narrower than the triangular, acute sepals. Petals yellow, obcordate, about one-third longer than the sepals. Stamens 20. Styles filiform, subapical, slightly longer than the mature smooth achene.

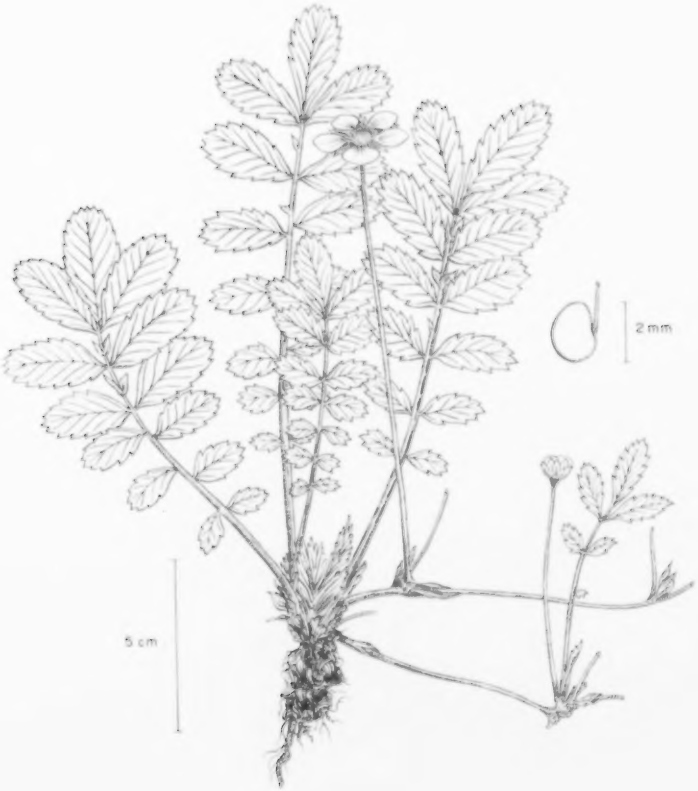
Damp ground in high montane regions; southeastern British Columbia to northern California, east to Saskatchewan, Idaho, Montana, Wyoming, Utah, Colorado, and New Mexico. Known only in the Rocky Mountains in the extreme southeast corner of the Province.



Potentilla ovina Macoun.

21. *Potentilla pacifica* Howell—Herbaceous perennial with spreading runners, together with the petioles, peduncles, and rachises glabrous or with some appressed pubescence. Leaves all basal, 2–4 dm long, mostly erect, pinnate with smaller leaflets interspersed between the larger; leaflets obovate or oval, coarsely serrate, glabrous or nearly so above, white tomentose beneath but scarcely silky. Peduncles up to 20 cm tall; bractlets usually simple. Sepals ovate, about 6 mm long. Petals yellow, up to 13 mm long, broadly obovate. Achenes laterally flattened, neither corky nor grooved.

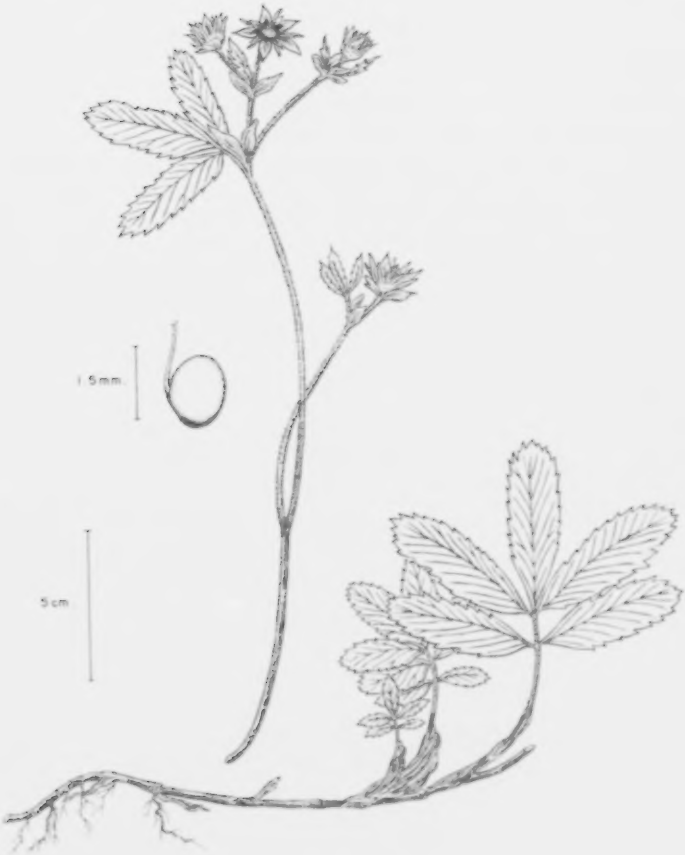
Moist situations near the Coast; Alaska to southern California. With us only west of the Coast Mountains.



Potentilla pacifica Howell.

22. *Potentilla palustris* (L.) Scop.—Perennial with long-creeping, often floating, more or less woody rhizome. Stems frequently reddish below, ascending to 1 m tall, herbaceous, dying back in the winter, glabrous below, becoming increasingly glandular pubescent above. Lower leaves pinnate with 5 or 7 leaflets; leaflets oblong, sharply and coarsely serrate, subglaucous beneath, pale green above, from nearly glabrous to (sometimes) densely villous beneath; stipules scarious, adnate to the petiole; petioles longer than the blades; upper leaves smaller, passing into ternate bracts. Inflorescence a loose terminal cyme with several to many flowers; pedicels and calyx glandular-pubescent. Sepals ovate, acuminate, purplish, accrescent; bractlets linear, much shorter and smaller than the sepals. Petals ovate-lanceolate, acuminate, deep purple, shorter than the sepals. Stamens about 25, purple. Carpels numerous, purple; style filiform, inserted median-laterally on the ovary. Achenes plumply ovate, smooth, brownish-purple.

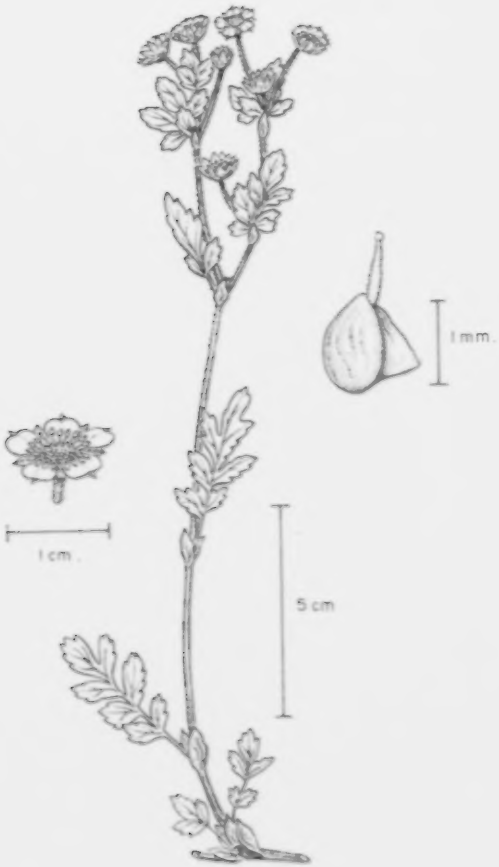
Marshes and bogs; Alaska to northern California, east Labrador, Newfoundland, Nova Scotia, New Jersey, Pennsylvania, Idaho, and Wyoming; Greenland; Eurasia. Common throughout.



Potentilla palustris (L.) Scop.

23. *Potentilla paradoxa* Nutt.—Annual, biennial, or short-lived perennial. Stems often stout, decumbent or ascending, subvillous, leafy. Leaves all pinnate, oblong-obovate; stipules conspicuous; leaflets 2–5 distant pairs, small, obovate to oblong, circular-dentate. Cyme paniculate, open, leafy-bracteate; pedicels erect to spreading-ascending. Calyx hirsute, lobes ovate-triangular, about 4 mm long; petals yellow, about as long as the sepals; anthers often abortive; style terminal, about as long as the ovary, thickened below. Mature achenes longitudinally ribbed with a prominent, wedge-shaped, corky enlargement along the ventral suture.

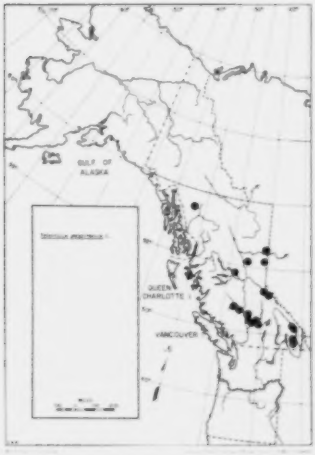
Damp places, meadows, and streambanks; Ontario to southern British Columbia, south to western New York, Pennsylvania, Ohio, Idaho, Missouri, Kansas, New Mexico, and Washington, also east Asia. Known from a collection at Spence's Bridge.

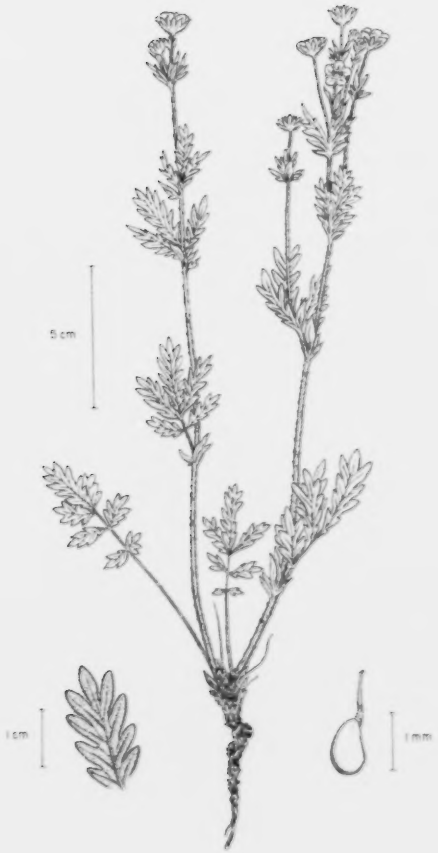


Potentilla paradoxa Nutt.

24. *Potentilla pensylvanica* L.—Caespitose perennial. Caudex branched and covered with marcescent, brown stipules. Flowering stems 1 to several, stiffly ascending, up to 4.5 dm tall, sparsely to rather densely pubescent, usually tomentose. Basal and lower cauline leaves oblong, longer than broad, pinnate with 7–15 oblong to lanceolate leaflets, each divided about three-quarter distance to the midrib into linear-oblong segments, upper surface grey-green, often strigose, lower greyish tomentose; stipules of cauline leaves cleft. Cyme rather compact, greyish-tomentose and strigose, several-flowered. Bracteoles lanceolate, subequal to the ovate calyx lobes, calyx more or less glandular. Petals yellow, obovate, about as long as the sepals. Stamens usually 20. Style subapically attached, about equal to the achene in length, filiform-conic, granular thickened at the base. Achenes smooth but often granular.

Dry plains and rocky slopes; Alaska to Labrador, south to British Columbia, Nevada, New Mexico, Kansas, Minnesota, and New Hampshire; Greenland; perhaps east Asia. Common in the drier parts of the Interior.

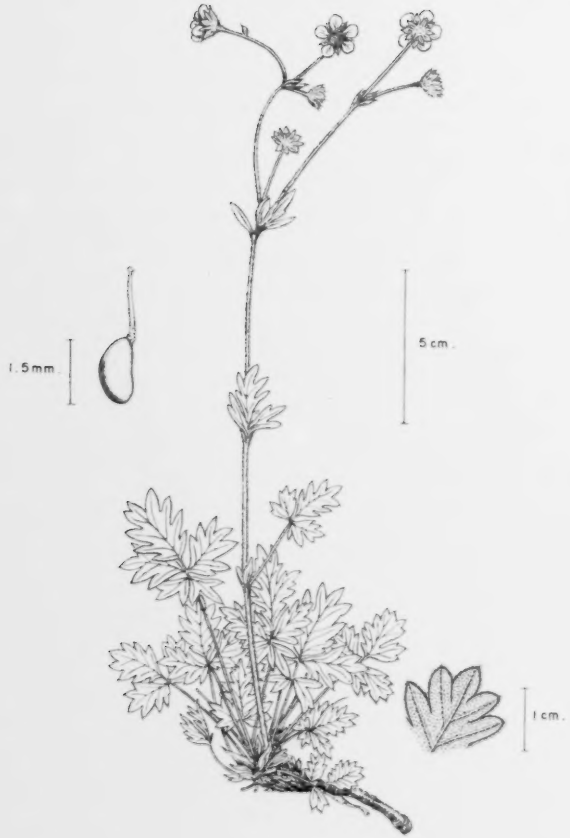




***Potentilla pensylvanica* L.**

25. *Potentilla quinquefolia* Rydb.—Herbaceous perennial. Caudex rather short and thick, branched. Stems several, up to 2 dm tall, ascending sparsely silky villous with spreading hairs. Basal leaves numerous, 5- (occasionally 3-) foliate; leaflets obovate, deeply cut into narrowly linear-oblong, often blunt lobes, usually greenish, sparsely appressed, silky-villous above, villous and white tomentose below; petioles subequal to or up to twice as long as the blades; cauline leaves sessile, 3-foliate, leaflets less deeply cut into broader lobes, stipules ovate, entire. Cyme bracteate, few flowered, more or less compact. Hypanthium silky villous, bractlets linear, considerably shorter and narrower than the lanceolate sepals. Petals yellow, obcordate, somewhat longer than the sepals. Stamens 20. Styles subapical, rather stout, granular thickened at base, slightly longer than the smooth achene.

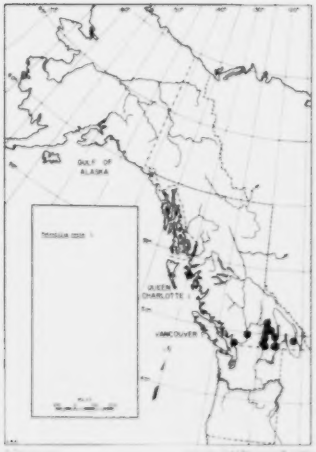
Gravelly soil in high montane regions; British Columbia to Saskatchewan, south in the Rocky Mountains to south central Oregon, Colorado, and Utah. Very rare and scattered in the Interior mountains.

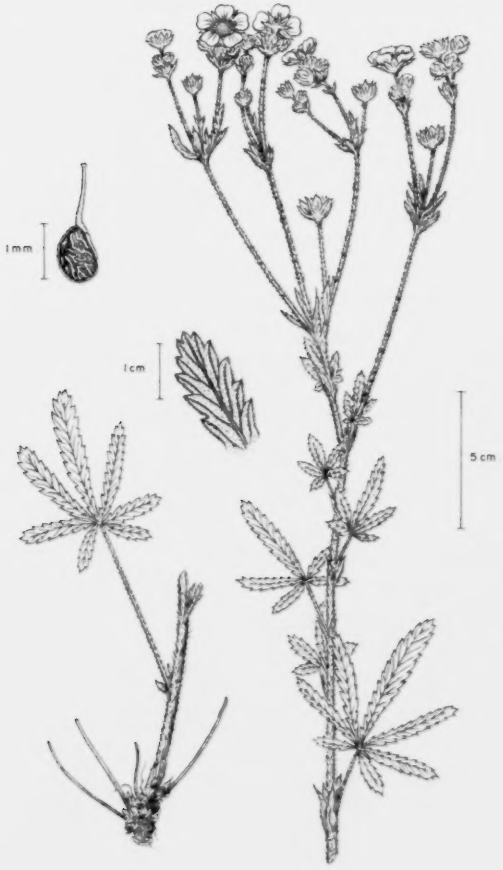


Potentilla quinquefolia Rydb.

26. *Potentilla recta* L.—Perennial herb. Caudex thick and branched. Stems 1 to several, stiffly erect, up to 7 dm tall, pubescent with short, stiff hairs and sparingly villous with long, flexuous, white hairs. Leaves mostly cauline, long petioled, palmate with 5–7 leaflets; leaflets large, middle one longest, the lateral progressively shorter, oblong or oblanceolate, uniformly serrate-dentate, green and appressed hairy on both sides, veins prominent beneath; stipules long-adnate. Inflorescence a many-flowered, flat-topped, dichotomous cyme, glandular pubescent and villous, bracts rather small. Calyx glandular, more or less densely villous; bracteoles lanceolate, acute, about as long as the ovate-lanceolate, acuminate sepals. Petals yellow, often sulphur coloured, obovate-orbicular, deeply emarginate, usually considerably longer than the sepals. Stamens 25–30. Styles more or less thickened, granular at the base. Achenes brownish, conspicuously reticulate, veiny.

Waste ground; adventitious in North America from Eurasia. Well-established in many parts of the dry Interior, less so on the Coast.

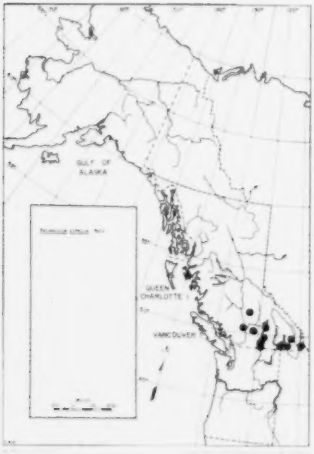


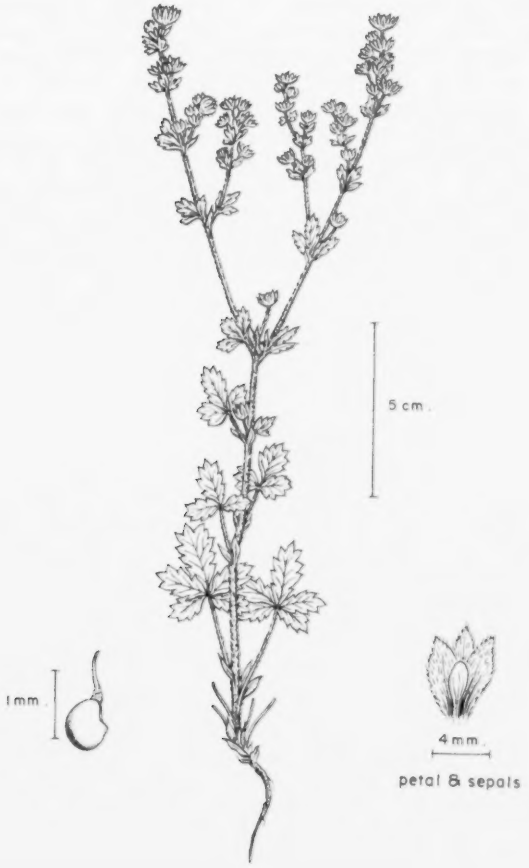


Potentilla recta **L.**

27. *Potentilla rivalis* Nutt. — Annual or biennial. Stem spreading or erect, up to 5 dm long, markedly tomentose, eglandular, freely branched, and floriferous more or less throughout. Basal leaves 5-, upper 3-foliate; leaflets oval to oblong-oblanceolate, coarsely crenate-serrate; stipules lance-ovoid, sometimes cleft. Cyme leafy bracteate, rather spreading. Sepals ovate-triangular, erect, longer than the hypanthium but shorter than the lanceolate bracteoles, soft pubescent, eglandular, markedly accrescent. Petals yellow, oblanceolate, about half the length of the sepals. Stamens 10, occasionally 15. Carpels numerous; style terminal, thickened at base. Achenes yellowish-brown, smooth or slightly wrinkled (*P. millegrana* Engelm.).

Damp bottom lands, particularly in the vicinity of water; British Columbia to southern California, east to Saskatchewan, Minnesota, Illinois, Missouri, New Mexico, and northern Mexico. Apparently limited to the Okanagan and Kootenay Valleys.

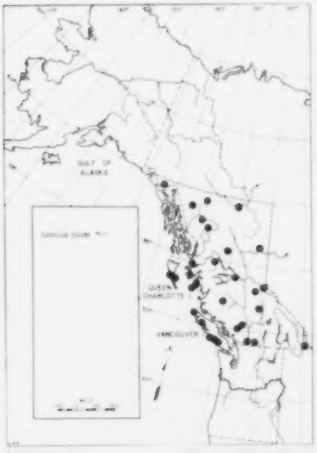


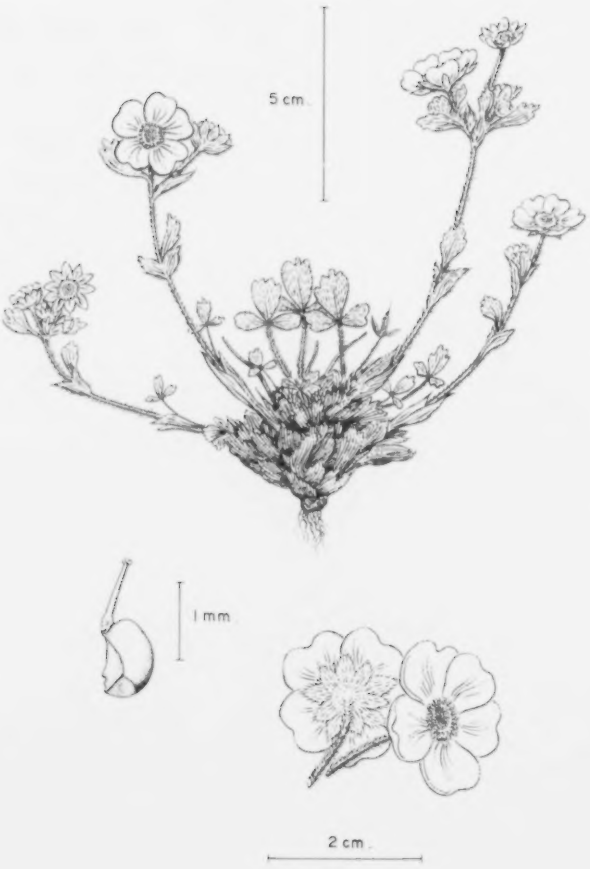


Potentilla rivalis Nutt.

28. *Potentilla villosa* Pall.—Perennial herb. Caudex short and stout, covered with marcescent stipules. Flowering stems up to 3 dm tall but much shorter in alpine forms. Basal leaves ternate; leaflets thick, coriaceous, strongly veined, obovate, cuneate, coarsely crenate-dentate, teeth rounded; petioles and lower leaf surface lanate, upper silky villous to glabrate; young stipules pubescent, becoming brown and glabrate; cauline leaves often 2, subsessile, reduced. Cyme few-flowered; pedicels spreading villous; hypanthium villous-lanate; bracteoles elliptic to oval, subequal to the triangular calyx lobes. Petals yellow, broadly obcordate. Stamens 20. Style subapical, slightly verrucose at base. Achenes smooth or slightly reticulate.

Coastal bluffs, sand beaches, arctic tundra, alpine areas; Alaska to Washington, east to Rocky Mountains; northeast Asia. Throughout the Province, particularly along the Coast.





Potentilla villosa **Pall.**

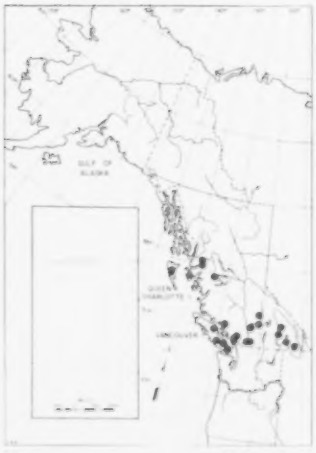
PRUNUS L.

Shrubs or small trees. Leaves alternate, simple, serrate, deciduous (ours) or evergreen, often with conspicuous petiolar glands. Flowers small but showy in terminal racemes or corymbs, sometimes solitary. Petals white (ours), 5. Stamens 20–30, filaments slender. Fruit a 1-seeded drupe with a fleshy mesocarp and stony endocarp.

About 200 species of North Temperate regions and the Andes of South America.

Flowers numerous in elongated racemes; leaves sharply and finely serrate ..... *P. virginiana*
Flowers few in umbel-like corymbs; leaves not sharply and finely serrate.
  Leaves acuminate, rather irregularly crenate-serrate; petioles often with 2 glands at top; fruit red, 4–7 mm long ..... *P. pensylvanica*
  Leaves obtuse to acute but not gradually long acuminate; rather uniformly crenulate to serrate; petioles usually lacking glands; fruit red to black, 8–12 mm long ..... *P. emarginata*

1. *Prunus emarginata* (Dougl.) Walpers—Shrub or small tree to 9 m, glabrous to densely pubescent throughout. Leaves oblong-obovate to oblanceolate, obtuse or acutish at apex, cuneate



Prunus emarginata (Dougl.) Walpers.

or acute at base, glandular serrate to crenulate, petioles and lower side of leaves pubescent to subglabrous. Inflorescence mostly corymbose. Sepals oblong, obtuse, about 2 mm long. Petals white, obovate, about 7 mm long, frequently long-hairy on the backs below. Stamens about 20. Drupe bright red, bitter and astringent; stone ellipsoidal more or less pointed at each end.

Stream sides, open woods, damp mountain slopes; British Columbia from Lat. 55°N. to California, east to Montana, Wyoming, Utah, and Arizona. Mostly west of the Coast Mountains and in the Interior wet belt.

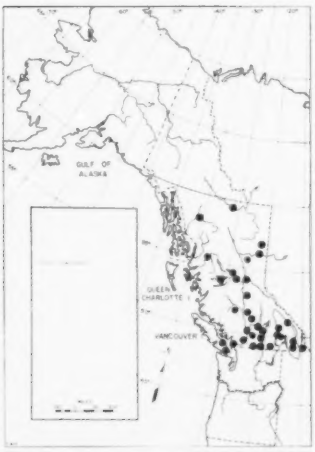
2. *Prunus pensylvanica* L.f.—Slender shrub or small tree to 11 m, bark reddish-brown. Leaves lanceolate to oblong-lanceolate or broader but never less than twice as long as broad, long acuminate to acute, obtuse or rounded at base, thin, finely and irregularly crenate-serrate, the gland near the sinus, green and glabrous beneath; petioles usually glandular near the summit. Inflorescence corymbose, flowers expanding with the leaves. Sepals glabrous. Petals white, about 6 mm long, usually villous on the back near the base. Fruit a globose drupe with thin, light-red, acid flesh.

Prunus pensylvanica **L.f.**

Dry woods and open places, often abundant after fires; British Columbia to Labrador and Newfoundland, south to Colorado, South Dakota, northern Indiana, West Virginia, and New Jersey. Limited to the Interior from about 55°N. southward.

3. *Prunus virginiana* L.—Usually shrubby but sometimes a tree to 10 m; young twigs hairy to glabrous. Leaves thin, oblong to obovate, obtuse, acute or abruptly short-acuminate, obtuse to subcordate at base, sharply serrate with slender ascending teeth, glabrous and paler beneath or in some forms quite pubescent. Racemes at the end of the current season's growth; flowers numerous. Sepals conspicuously glandular-erose, obtuse, deciduous. Petals white, about 4 mm long. Fruit dark red or purple, very astringent (*P. demissa* (Nutt.) Walp., *P. melanocarpa* Rydb.).

Edge of woods and thickets; British Columbia to Newfoundland, south to California, New Mexico, Dakotas, Kansas, northern Tennessee, and North Carolina. Particularly common in the southern Interior, absent from the Coast except on southeastern Vancouver Island and on the adjacent islands and Mainland.



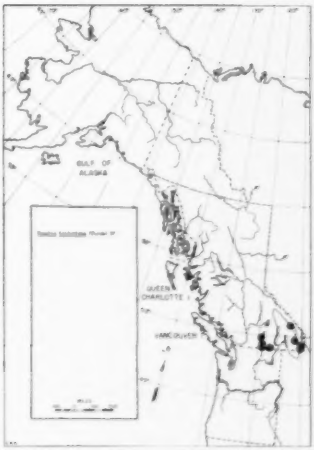
Prunus virginiana L.

PURSHIA DC.

Stiff, much-branched shrubs or sometimes small trees. Leaves cuneate, mostly 3-lobed at the apex. Flowers solitary on short, lateral leafy spurs. Hypanthium narrowly funnel-form. Calyx 5-lobed, persistent. Petals pale yellow with a slender claw. Stamens 15–25. Carpels 1. Fruit a large, beaked achene.

A genus of 2 species endemic to arid western North America.

Purshia tridentata **(Pursh) DC.**—Shrub to 3 m tall; bark grey or brownish; twigs more or less glandular tomentose, especially when young. Leaves cuneate, about 2 cm long, 3-lobed at apex, revolute-margined, greenish but pubescent above, white tomentose beneath, lobes oblong-linear. Flowers solitary on short pedicels. Hypanthium funnel-form, about as long as the calyx-lobes. Sepals about 4 mm long, oblong, markedly stipitate glandular on the outside. Petals yellow, spatulate-obovate, about twice as long as the sepals. Stamens usually about 25, exserted. Carpel 1. Achene fusiform, about 15 mm long, glandular, velvety-pubescent. Seed black, pear-shaped, quite large.



Purshia tridentata (Pursh) DC.

Dry slopes and open grassland; southern British Columbia to California, east to western Montana, western Wyoming, Colorado, and New Mexico. Found in the Okanagan Valley south from Westbank and in the Columbia Valley south from Fairmont.

ROSA L.

Shrubs with erect, trailing, or scrambling stems. Stem usually prickly or bristly. Leaves odd-pinnately compound, deciduous, serrate as a rule; stipules usually green, adnate to the petiole. Flowers large, perfect, borne singly or in corymbiform cymes at the ends of lateral branches or main shoots; petals pink or rose-coloured (ours), less commonly yellow or white, 5-merous. Stamens numerous. Carpels at least 10, borne on the inside of a globose to ellipsoid urn-like hypanthium which ripens into the reddish or purplish fleshy hip.

A genus of at least 100 species of North Temperate and subtropical regions.

ERLANSON, EILEEN. Experimental data for a revision of the North American wild roses. Bot. Gas. **96**:197–259. 1934.

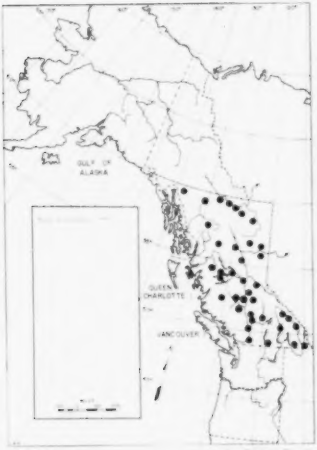
JONES, G. N. The Washington species and varieties of Rosa. Madroño. **3**:120–135. 1935.

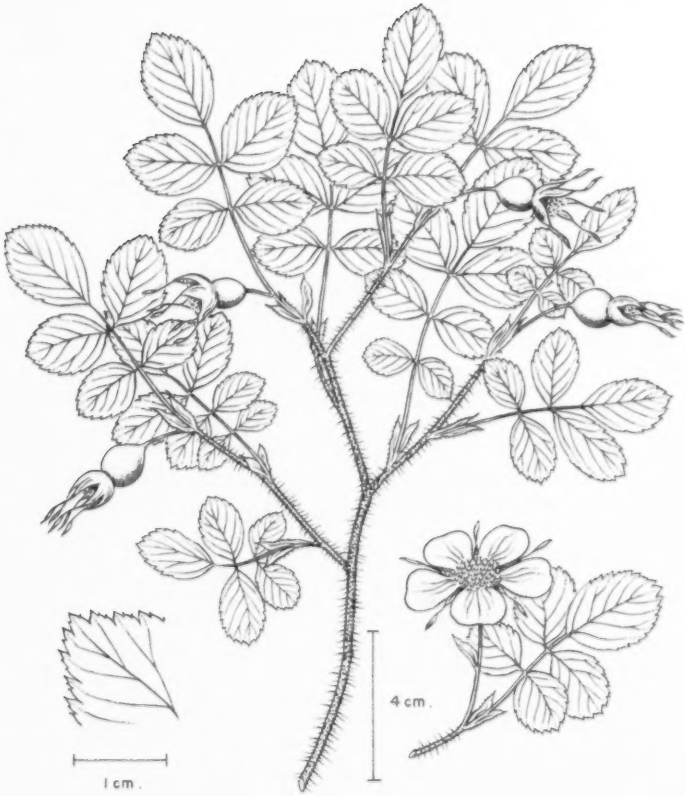
LEWIS, W. H. A monograph of the genus Rosa in North America. I. *R. acicularis*. Brittonia. **11**:1–24. 1959.

1. Calyx and upper portion of hypanthium deciduous in fruit; flowers small; sepals not more than 12 mm long; petals less than 15 mm long ..... *R. gymnocarpa*
1. Calyx and upper portion of hypanthium persistent in fruit; flowers considerably larger.
   2. Infrastipular prickles absent or at least not different from the others.
      3. Stems generally more or less bristly ..... *R. acicularis*
      3. Stems generally unarmed, at most bristly toward the base.
         Sepals narrowed toward the base, nearly always with gland-tipped bristles on the back; leaflets ovate with more or less rounded base, serrations fine ..... *R. pisocarpa*
         Sepals not narrowed toward the base, nearly always lacking bristles and glands on the back; leaflets oval to obovate, cuneate at base, serrations coarse ..... *R. woodsii*

2. Infrastipular prickles present.
   4. Flowers mostly solitary, usually on laterals less than 12 cm long, petals more than 2.5 cm long; widely distributed across southern half of the Province ..... *R. nutkana*
   4. Flowers commonly clustered, usually on laterals more than 12 cm long, petals less than 2.4 cm long.
      Sepals nearly always with gland-tipped bristles on back; leaflets puberulous beneath, rounded at base; stipules broad; limited to Vancouver Island and lower Fraser Valley ..... *R. pisocarpa*
      Sepals usually without glands and bristles on back; leaflets glabrous beneath, cuneate at base; stipules narrow; widely distributed east of the Coast Mountains ..... *R. woodsii*

1. *Rosa acicularis* Lindl.—Shrub to 1 m tall. Stems usually more or less densely covered with straight, bristly prickles. Leaves 5–7 foliolate as a rule; leaflets oblong-elliptic, coarsely biserrate with the serrations usually glandular, more or less rounded at base, commonly glandular; stipules pubescent, margins glandular, densely covered with stipitate glands when young. Flowers usually single on short lateral branches from stems of the previous year. Hypanthium and pedicels glabrous. Sepals up to 3 cm long, persistent, becoming erect and connivent. Petals pink, about as long as the



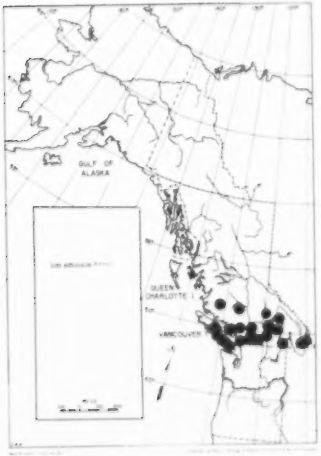


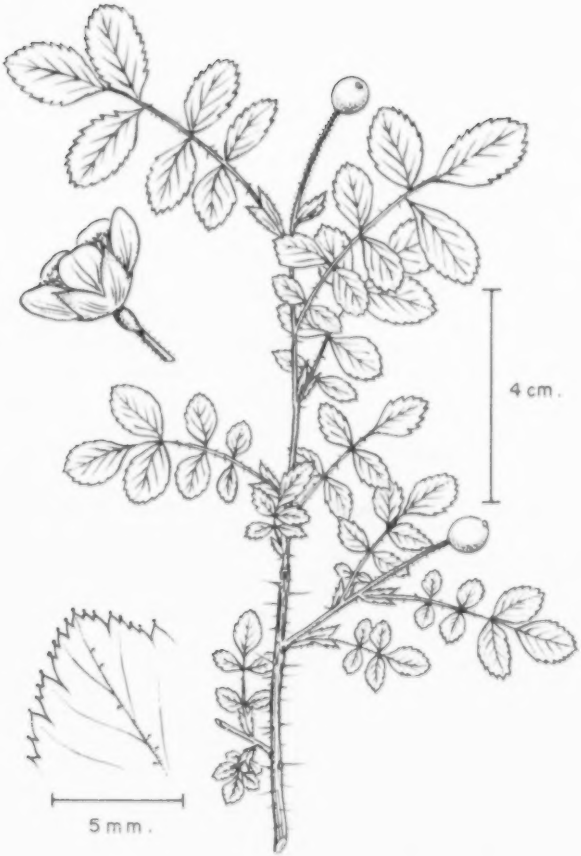
Rosa acicularis Lindl.

sepals. Hips pyriform, 1–2 cm long, purplish (*R. sayi* Schw., *R. bourgeauiana* Rydb.).

Open woods, hills, and banks; Alaska to Quebec, south in the Cordillera to northern New Mexico, Colorado, Wyoming, Montana, Idaho, Minnesota, and northern New York; Eurasia. General throughout the Interior from Hope eastward, except in very arid areas.

2. *Rosa gymnocarpa* Nutt.—Slender, erect shrub up to 2 m tall. Stems frequently very bristly with slender infrastipular prickles, except on the flowering shoot, sometimes unarmed. Leaves 5- to 9-foliolate; leaflets more or less elliptic, thin, paler beneath, glabrous on both surfaces although sometimes sparsely stipitate-glandular on the midrib beneath, doubly serrate with gland-tipped teeth; stipules narrow, glandular usually dentate; petioles and leaf-rachises glandular-hispid, sometimes with a few prickles. Flowers small, usually single at the ends of branches; pedicels short, frequently glandular-setose. Hypanthium ellipsoidal. Sepals up to 12 mm long, ovate-acuminate, glabrous or sometimes somewhat glandular on the back, deciduous with the styles. Petals slightly longer than the sepals. Hips bright red, ovoid, about 6 mm broad.

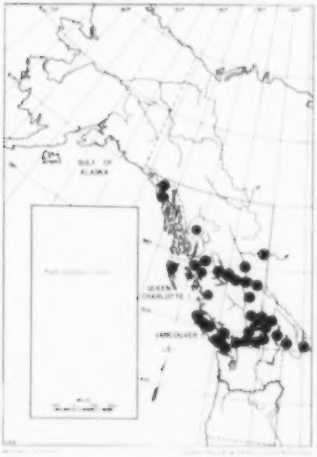




Rosa gymnocarpa Nuttall

Woods; southern British Columbia to California and generally west of the Continental Divide. Throughout the southern part of the Province from about Lat. 52°N southward.

3. *Rosa nutkana* Crépin—Shrub to 2.5 m. Stem sometimes slender but more often stout, erect, usually armed with a large pair of straight, or somewhat curved, flattened, infrastipular thorns; floral branches glabrous or nearly so. Leaves usually 5–7 foliolate; leaflets broadly ovate, rounded at both ends or somewhat acute at the apex, doubly serrate with glandular teeth or singly serrate without glandular teeth, dark green and glabrous above, paler and more or less glandular-puberulent beneath; stipules usually glandular-dentate; petioles and rachises more or less glandular-puberulent or short pubescent, rachis often with a few prickles and stipitate glands. Flowers usually solitary, sometimes 2 or 3; pedicels glabrous or glandular-hispid. Hypanthium glabrous or covered with gland-tipped bristles. Sepals lanceolate, up to 3.5 cm long, often with foliaceous appendages, glabrous or rarely glandular on the back.



Rosa nutkana Crépin

Petals pink to rose, broadly obcordate, slightly longer than the sepals. Hips purplish-red, globose, up to 18 mm broad (*R. spaldingii* Crépin).

Thickets and open woods; Alaska to northern California, east to eastern Oregon, Colorado, and Utah. General along the Coast and in the Interior as far north as about Lat. 56°N.

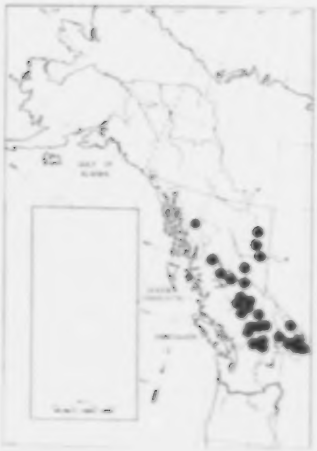
4. *Rosa pisocarpa* A. Gray—Shrub to 2 m. Stems slender, usually with weak, straight infrastipular prickles, occasionally bristly but never as much so as *R. acicularis;* floral branches sometimes unarmed. Leaves 5- to 9-foliolate: leaflets more or less elliptic, finely and closely serrate, glabrous above, puberulent beneath; stipules densely short pubescent, somewhat glandular-dentate. Flowers rather small in few-flowered corymbiform cymes, occasionally solitary. Hypanthium glabrous, glaucous. Sepals about 1.5 cm long, nearly always stipitate-glandular on the back. Petals rose, up to 2 cm long. Hips pyriform, reddish purple.

Thickets and swampy places; southern British Columbia to northern California west of Coast Mountains; Vancouver Island and the lower Fraser Valley from Yale.

Rosa pisocarpa Gray.

5. *Rosa woodsii* Lindl.—Shrub to 2 m, freely branched. Stems armed with straight, terete infrastipular prickles, young shoots bristly; floral branches often unarmed. Leaves 5- to 7-foliolate; leaflets obovate, cuneate at base, mostly singly serrate, teeth not glandular-tipped as a rule, green and glabrous above, pale and glandular-puberulent beneath; stipules entire or glandular-dentate, puberulent on the back; petioles and rachises puberulent. Flowers rather small, in corymbiform cymes; pedicels glabrous. Hypanthium smooth. Sepals about 9 mm long, often denticulate and puberulent, generally eglandular, erect or spreading in fruit. Petals slightly longer than the sepals, pale to strong rose. Hips dark red, globose, about 9 mm broad (*R. macounii* Greene).

From open plains and prairies to moist stream or watersides; southern Mackenzie, British Columbia, eastern Washington, eastern Oregon, and southern California, east to Saskatchewan, Minnesota, Wisconsin, Missouri, and Texas. Common throughout the drier parts of the Interior from Lat. 56°N. and in the Peace River District, absent from the Coast.



Rosa woodsii Lindl.

RUBUS L.

Perennial shrubs (some species semi-herbaceous). Stems erect, arching or trailing, often biennial, the first year leaf-bearing (primocanes), the second floriferous (floricanes), frequently armed with bristles or flattened prickles. Leaves deciduous or evergreen, simple or compound, serrated or lobed; stipules well developed, persistent. Inflorescence various or flowers solitary. Hypanthium small, flat, or shallowly companulate. Sepals 5, valvate, spreading or reflexed, often with a terminal caudate appendage, persistent in fruit. Petals 5, frequently showy, white or reddish, erect or spreading. Stamens numerous, inserted on the margin of the hypanthium. Carpels few to many, inserted on the receptacle which often elongates in fruit. Fruit a cluster of more or less coherent drupelets that fall separately or together, often closely associated with the fleshy receptacle.

Taxonomically a large and difficult genus of several hundred species. Almost cosmopolitan in distribution but best developed in the Northern Hemisphere. A number of species and hybrids are in cultivation for their fruits.

FERNALD, M. L. *Rubus idaeus* and some of its variations in North America. Rhodora **21**:89–98. 1919.

BAILEY, L. H. Species Batorum. The genus *Rubus* in North America. Gentes Herb. **5**:1–932. 1941.

BROWN, S. W. The origin and nature of variability in the Pacific Coast blackberries (*Rubus ursinus* Cham & Schlecht and *R. lemurum* n. sp.). Am. Jour. Bot. **30**:686–697. 1943.

Key adapted from Hitchcock.

1. Plants unarmed.
   2. Stems erect, woody, rarely less than 50 cm tall.
      Petals red; leaves 3-foliolate ..... *R. spectabilis*
      Petals white; leaves palmately lobed ..... *R. parviflorus*
   2. Stems mostly trailing, essentially herbaceous, seldom if ever as much as 50 cm tall.
      3. Plant dioecious; leaves broadly cordate-reniform, shallowly lobed; flowers solitary on erect, leafy branches ..... *R. chamæmorus*

3. Plants with perfect flowers; leaves compound (except in *R. lasiococcus*).

4. Petals more or less reddish, 10–16 mm long; plant not stoloniferous ..... *R. arcticus*

4. Petals white, mostly less than 8 mm long; plants usually stoloniferous.

5. Leaflets 5, sometimes only 3, but lower pair divided nearly to the base ..... *R. pedatus*

5. Leaflets 3, or simple and deeply 3-lobed.

Leaves usually simple and merely deeply lobed; ovaries densely pubescent; filaments slender ..... *R. lasiococcus*

Leaves usually 3-foliolate; ovary glabrous; filaments flattened ..... *R. pubescens*

1. Plants armed with bristle-like or broad-based, often recurved, prickles.

6. Leaves (at least in part) simple and cordate, evergreen; stipules ovate-lanceolate, slenderly acuminate; stems trailing; petals pink or purple ..... *R. nivalis*

6. Leaves nearly always compound, mostly deciduous; stipules various but usually slender or adnate to the petioles; petals mostly white.

7. Receptacle fleshy forming part of the (blackberry-like) ripe fruit; stems mainly trailing or clambering; plants strongly armed, at least some of the prickles flattened or hooked; petals white or pale pink.

8. Plants more or less completely dioecious, pistillate flowers with distinctly rudimentary stamens, the staminate with small nonfunctional carpels; stems slender, trailing, armed with slender, scarcely flattened prickles; leaves trifoliolate, sometimes simple, deciduous ..... *R. ursinus*

8. Plants with perfect flowers; stems thick, clambering to erect, armed with large often flattened prickles; leaves various.

Leaves evergreen; leaflets laciniate to dissected ..... *R. laciniatus*

Leaves deciduous or more or less evergreen; leaflets merely toothed ..... *R. procerus*

7. Receptacle dry or only slightly fleshy, usually not forming part of the ripened (raspberry-like) fruit, or if partly succulent the petals deep pink; stems mainly erect or arching, rarely trailing; the prickles (except in *R. leucodermis*) neither flattened nor hooked.

9. Petals pink to red, usually well over 1.5 cm long; fruit salmon-coloured to red; stems erect, not vine-like, often armed only (or chiefly) near the base; leaves not prickly ..... *R. spectabilis*

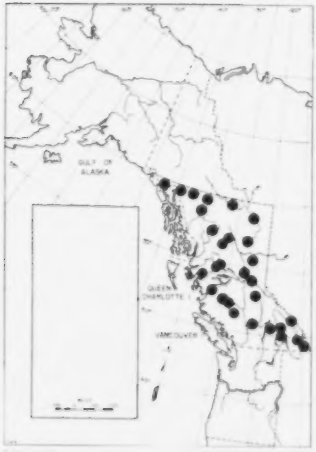
9. Petals white, usually less than 1.5 cm long; fruit often black; leaves frequently prickly on the back.

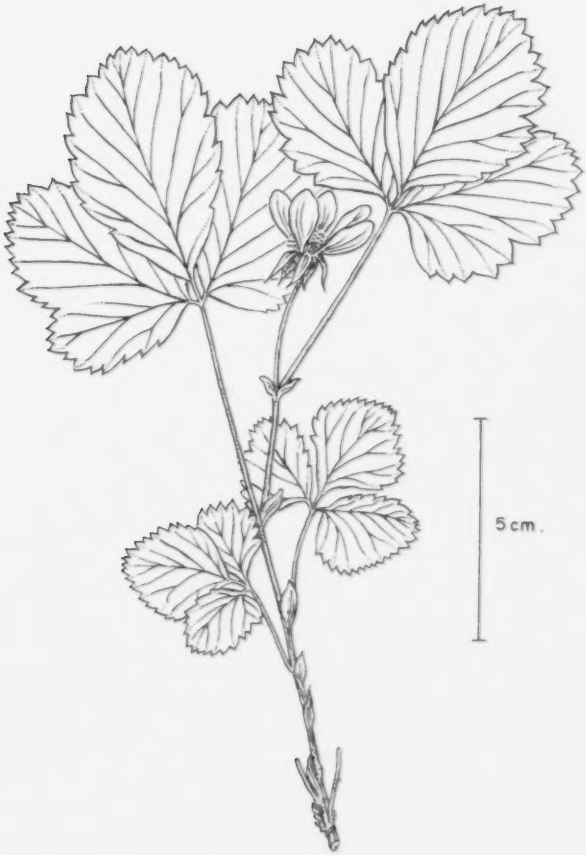
   Main prickles flattened and often retrorsely hooked; fruit dark reddish-blue to black; flowers several in umbellate to flat-topped clusters ..... *R. leucodermis*

   Main prickles usually neither flattened nor retrorsely hooked but sometimes flattened; fruit red, occasionally yellowish; flowers few in open but not flat-topped raceme or thyrse ..... *R. idaeus*

1. *Rubus arcticus* L. — Herbaceous, strongly rhizomatous. Vegetative shoots very short; flowering shoots erect, several from a perennial subterranean base, up to 10 cm tall, finely pubescent. Leaves 2 or 3, 3-lobed or 3-foliolate, coriaceous, lustrous; leaflets, if present, cuneate-obovate, terminal short-petioled, broadly rounded or acute at summit, sparsely villous to glabrous, deeply and coarsely serrate; stipules conspicuous, ovate-lanceolate, entire. Flowers 1–3; pedicel eglandular. Calyx lobes narrowly triangular, somewhat caudate, up to 15 mm long, finely pubescent, reflexed; calyx tube glabrous to glandular-pubescent. Petals pink to rose, longer than the sepals, nearly erect, spatulate to narrowly oblanceolate with a clawed base. Stamens 30–40, filaments rose or purple, sometimes yellowish or whitish. Carpels 20–30. Drupelets reddish (*R. acaulis* Michx., *R. stellatus* Sm.).

Tundra and cold bogs; Alaska to Labrador, south to British Columbia, Montana, Wyoming, Colorado, Saskatchewan, Minnesota, Manitoba, and Quebec; Eurasia. Frequent in the Interior, rare on Coast Mountains.

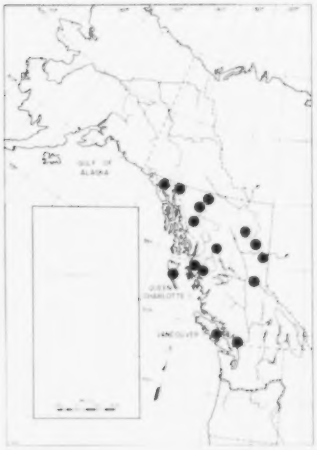


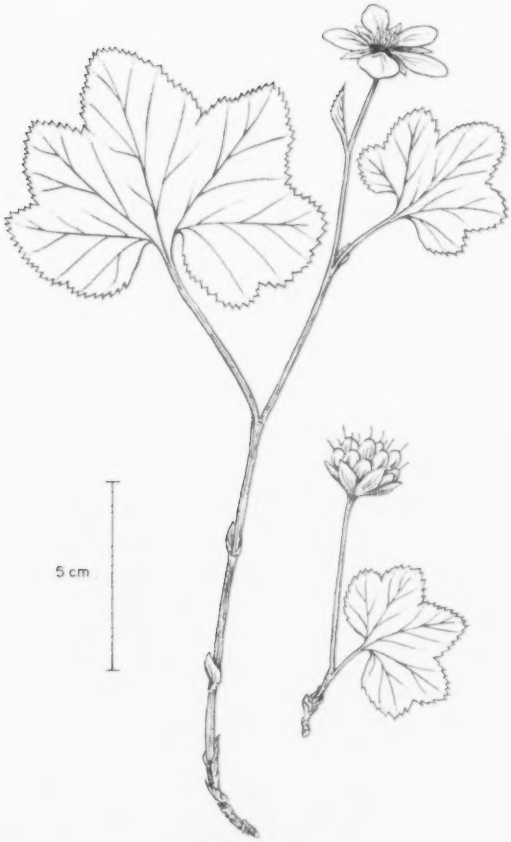


Rubus arcticus L.

2. *Rubus chamæmorus* L. — Herbaceous perennial with extensively creeping rhizome. Stems erect, up to 3 dm tall, unbranched, unarmed. Leaves 1–3, round-reniform, cordate more or less 5-lobed, coriaceous, serrate, long petioled; stipules only at lower nodes. Flowers solitary, dioecious, terminal, long pedicelled. Calyx cleft nearly to the base, lobes ovate-oblong, blunt or mucronate. Petals white, about 1.5 cm long, obovate, wide-spreading. Drupelets first reddish then through amber to yellow when mature.

Peaty soil, mostly in cold bogs; Alaska to Greenland, south to British Columbia, Alberta, Manitoba, Long Island, northern New Hampshire, and northern Maine; Eurasia. Northern Interior mainly, and Lower Mainland.

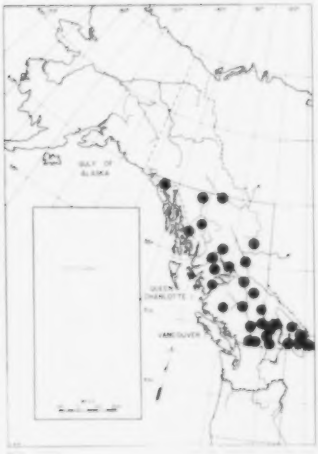




Rubus chamæmorus L.

3. *Rubus idaeus* L.—Canes biennial, upright, not rooting at the tips, prickly bristly or almost unarmed, bark brownish, exfoliating. Leaves of the first year canes pinnate with 3–7 leaflets; leaflets oblong-ovate to oblong-lanceolate, irregularly serrate-pointed, leaves of the flowering canes mostly ternate; all leaves greenish, glabrous to sparsely hirsute above, greyish tomentose to subglabrous beneath. Flowers drooping or in small thyrsoid clusters. Calyx often bristly, lobes about equalling the narrow white petals. Stamens very numerous. Carpels numerous, ovary tomentulose. Fruit red (sometimes yellow), falling intact from the dry receptacle (*R. strigosus* Michx.).

Open places; Alaska to Newfoundland, south to northern Mexico, Arizona, New Mexico, Iowa, Minnesota, Tennessee, and North Carolina; Eurasia. Common throughout, except west of the Coast Mountains.



Rubus idaeus L.

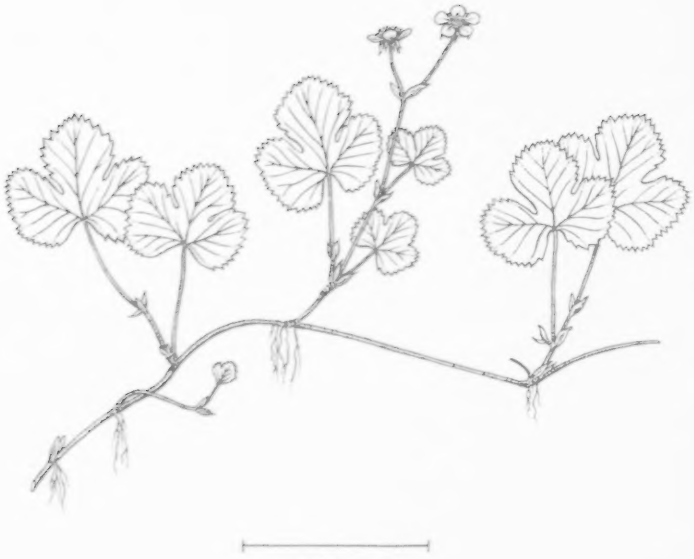
4. ***Rubus laciniatus*** **Willd.**—Canes up to 12 m long, erect at first, later arching and clambering, glabrescent, strongly armed with broad-based, flat, recurved prickles. Leaves evergreen, persistent, 5-foliolate but with the leaflets deeply and irregularly cleft into secondary leaflets, more or less glabrous above, pubescent but greyish-green below. Inflorescence corymbiform-paniculate; pedicels with flat, curved prickles. Calyx with slender, sharp prickles, lobes up to 13 mm long with long, foliaceous appendages. Petals pink to white, cuneate-obovate, deeply 3-lobed, about as long as the sepals. Stamens numerous. Carpels few. Drupelets dark, reddish-black, coherent, dropping with the fleshy receptacle.

Roadsides and waste places; cultivated and naturalized west of the Coast Mountains, also in eastern North America; probably native of Europe. Established and quite a serious pest locally on the Lower Mainland and Vancouver Island.

Rubus laciniatus Willd.

5. *Rubus lasiococcus* Gray—Unarmed, herbaceous perennial. Stems slender, widely creeping, rooting at the nodes; flowering branches erect up to 10 cm tall. Leaves 1–3, cordate-reniform, 3-lobed, lobes obtuse, unevenly serrate-dentate, sparsely pubescent above and on the veins beneath; stipules large, scarious. Flowers 1 or 2; pedicels slender. Calyx puberulent, lobes about 6 mm long, ovate-lanceolate, acuminate, reflexed. Petals white, obcordate, slightly longer than the sepals. Stamens numerous. Carpels few. Fruit red, densely puberulent.

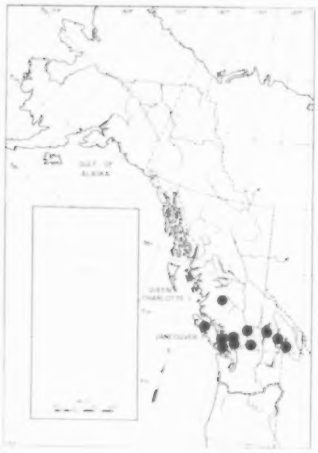
Open montane situations; southern British Columbia to northwestern California in the Cascade Mountains, also in the Olympic Mountains. Known only from the Manning Park area.



Rubus lasiococcus Gray.

6. *Rubus leucodermis* Dougl.—Stems clustered, erect to 7 dm, later arching and rooting at the tip, glaucous, armed with short, strong, usually recurved prickles. Leaves 3-foliolate, occasionally 5; leaflets ovate-lanceolate, acuminate, 2-serrate, glabrous above, finely white tomentose beneath; petioles, pedicels, and veins prickly. Flowers 3–7 in a corymbose cluster. Calyx tomentose, often glandular; sepals up to 10 mm long, acuminate, reflexed, much longer than the inconspicuous white petals. Stamens very numerous. Carpels numerous, ovary tomentulose. Fruit dark red to purplish with fine tomentulose bloom.

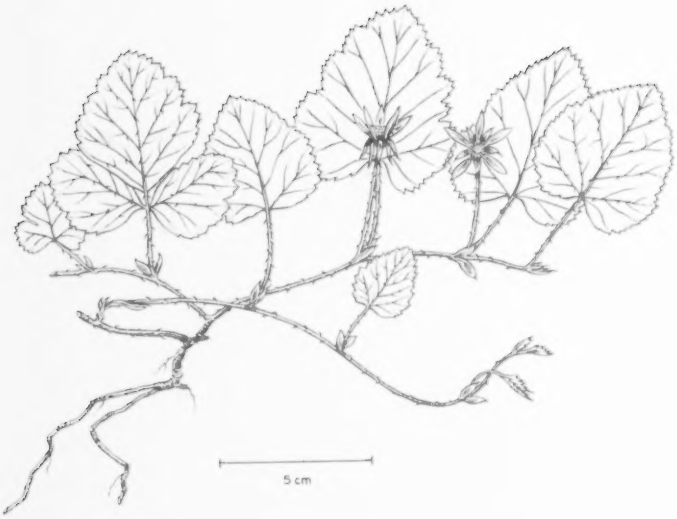
Open woods; southern British Columbia to California, east to Montana, Wyoming, Utah, and Nevada. Across British Columbia south from Lat. 51°N.



Rubus leucodermis Dougl.

7. ***Rubus nivalis*** **Dougl.**—Perennial. Stem somewhat woody, up to 11 dm long, widely creeping and freely rooting, puberulent, armed with recurved prickles. Leaves simple, rarely ternate, ovate, cordate, as a rule more or less distinctly 3-lobed, dentate with broad, mucronate teeth, glabrous or sparingly hispid, usually prickly on the veins beneath; stipules ovate-lanceolate, entire; petioles with recurved prickles. Flowers usually solitary, occasionally in pairs, on short floral branches. Hypanthium pubescent and more or less bristly. Sepals about 8 mm long, ovate-lanceolate, purplish, reflexed. Petals purple to pink, linear-lanceolate. inconspicuous mostly equalling or longer than the sepals. Stamens often 15. Carpels few, ovary pubescent. Drupelets large, red.

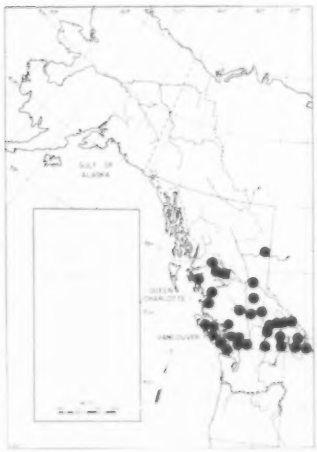
Open to shaded montane situations, usually at quite high altitudes; southern British Columbia to Oregon, east to Idaho. Very rare, extreme southern British Columbia only.



Rubus nivalis Dougl.

8. *Rubus parviflorus* Nutt.—Shrub with many erect stems up to 2.5 m tall. Stems with exfoliating flaky bark, unarmed, more or less stipitate glandular-hispid or pubescent, especially on young growth. Leaf blades large, soft, orbicular-reniform, palmately 3–7 lobed with deep basal sinus; lobes triangular, acute dentate, teeth ovate, mucronate, blades green and sparingly pilose on both sides or glandular-pruinose beneath; petioles about as long as the blades, stipitate-glandular. Inflorescence cymose-paniculate, 3–11 flowered. Sepals broadly ovate, abruptly caudate-acuminate, up to 15 mm long, white tomentose within, often stipitate-glandular on back, spreading. Petals white, ovate, up to 30 mm long. Stamens and carpels numerous; ovaries pubescent. Drupelets red, pubescent, soft, and rather insipid to taste (*R. nutkanus* Moc.).

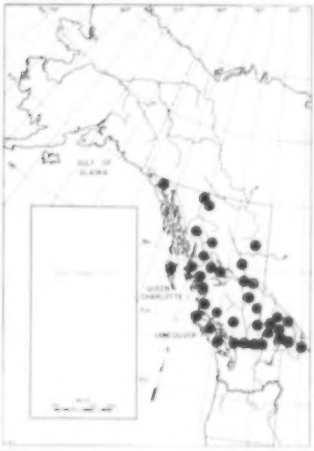
Open situation and edges of woods from sea-level to quite high altitudes; southern Alaska to Bruce Peninsula, Ontario, south to northern Mexico, New Mexico, Colorado, Wyoming, and northern Minnesota. Common throughout as far north as Lat. 55°N. and along the Coast to southern Alaska.

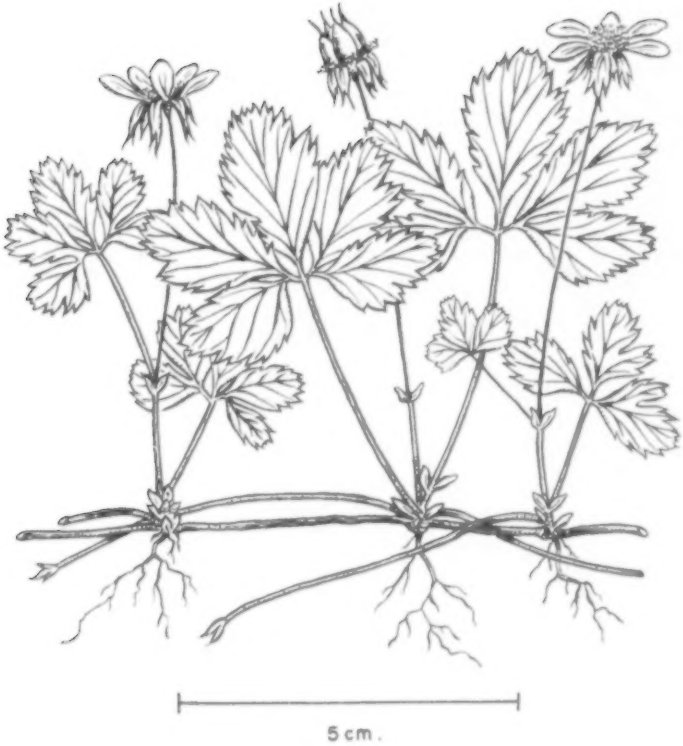


Rubus parviflorus Nutt.

9. *Rubus pedatus* J. E. Smith—Herbaceous perennial. Stem creeping, up to 1 m long, glabrous, unarmed, rooting at the nodes; flowering branches erect, very short. Leaves usually pedately 5-(sometimes 3-) foliolate; leaflets obovate, irregularly incised, essentially glabrous; petioles slender, usually longer than the blades. Flowers solitary; pedicels very slender. Sepals foliaceous, about 9 mm long, often lobed. Petals white oblong, equalling or slightly longer than the sepals, spreading or reflexed. Stamens numerous. Carpels very few. Drupelets red, more or less coherent.

Damp, usually montane woods; Alaska to southern Oregon, east to western Alberta, northern Idaho, and western Montana. Occurs in suitable places throughout, particularly at high altitudes in the southern part of the Province.

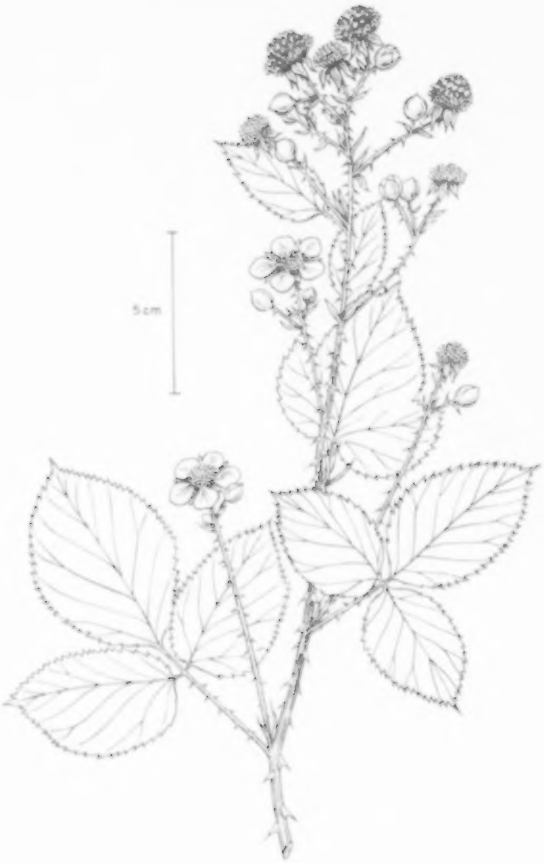




Rubus pedatus J. E. Smith.

10. *Rubus procerus* P. J. Muell.—Very coarse, shrubby perennial. Stems greatly elongated, erect but eventually arching and scrambling, freely rooting at the tips, flat-sided, more or less canescent, heavily armed with stout, flat-based, recurved prickles. Leaves more or less evergreen, on vegetative shoots 5-foliolate, on floral shoot mostly 3-foliolate; leaflets ovate, biserrate, short acuminate, green and glabrous above, strongly dirty white beneath with dense felty tomentum. Inflorescence a thyrsiform panicle with up to 2 flowers, lanate, with strong recurved prickles. Calyx canescent-tomentose, unarmed, eglandular. Petals pinkish to white, rounded-ovate, short-clawed, slightly longer than the sepals. Stamens very numerous. Carpels many. Drupelets black, falling with the fleshy receptacle as a subglobose blackberry.

Waste places, roadsides, ditches, etc.; escaped from cultivation and locally very abundant and a serious pest; Old World species. Locally established in a few places on the Lower Mainland and Vancouver Island.



Rubus procerus P. J. Muell.

11. *Rubus pubescens* Raf.—Vegetative stems at first upright later creeping and whip-like, often rooting at the nodes, more or less pilose; flowering stems erect, herbaceous, unarmed except sometimes for a few bristles, up to 5 dm tall. Leaves 3-foliolate, long petioled; leaflets rhombic-ovate to obvate, acute, sharply toothed but often entire on the cuneate basal portion; stipules oblanceolate. Flowers 1–3 on short lateral branches; pedicels stipitate-glandular. Sepals lanceolate up to 8 mm long, reflexed, pilose pubescent. Petals white, with us very rarely rose, up to 12 mm long, lanceolate to obovate-spatulate. Stamens numerous; filaments white, broad, and flattened. Carpels 20–30. Drupelets dark red (*R. triflorus* Richards., *R. paracaulis* Bailey).

Damp woods and bogs; British Columbia to Labrador, south to Washington, northern Colorado, South Dakota, Iowa, Wisconsin, Indiana, West Virginia, and New Jersey. General throughout the Interior.

Rubus pubescens Raf.

12. *Rubus spectabilis* Pursh — Shrubby perennial, strongly rhizomatous. Stems erect to arching, up to 4 m tall, bark brownish-yellow, shreddy, mostly unarmed or with small straight prickles, particularly below. Leaves 3-foliolate, thin, green; leaflets glabrous or sparingly pubescent above, more or less pubescent on the veins below, biserrate, terminal acuminate at apex, truncate or cuneate at base, lateral obliquely ovate. Flowers usually solitary, sometimes 2–4, on short, leafy branches. Calyx pubescent, lobes about 1 cm long, acuminate. Petals reddish-purple, elliptic, about half as long again as the sepals. Stamens very numerous. Carpels fewer. Drupelets yellow or reddish, glabrous, more or less coherent.

Damp woods, swamps, and banks of streams at low altitudes; Aleutian Islands to northwestern California, west of Coast Mountains. Common along the Coast.

Rubus spectabilis Pursh.

13. *Rubus ursinus* Cham. & Schl.—Dioecious perennial. Stem woody, trailing, up to several metres long, rooting at tip, glaucous, armed with straight slender prickles; flowering branches erect, up to 4 dm tall. Leaves 3- to 5-foliolate (but on flowering branches only deeply lobed); leaflets ovate to oblong, coarsely serrate, glabrous or nearly so beneath. Inflorescence a few-flowered corymb; pedicels more or less purplish stipitate glandular. Staminate flowers large, pistillate smaller. Sepals villous, usually glandular, sometimes prickly, lobes lance-acuminate, up to 11 mm long. Petals white; those of the staminate flowers elliptic-spatulate, half as long again as the sepals, those of the pistillate flowers broader and shorter. Stamens very numerous. Carpels fewer. Fruit a blackberry up to 1 cm long, drupelets black, dropping with the persistent fleshy receptacle (*R. vitifolius* Cham. & Schl., *R. macropetalus* Dougl.).

Open places, particularly burns and logged-over areas; southern British Columbia to northern California, east to Idaho. Southern half of Vancouver Island and adjacent islands and Mainland.

Rubus ursinus Cham. & Schl.

SANGUISORBA L.

Annual or perennial herbs, the latter usually with thick rootstocks. Leaves odd-pinnate; stipules adnate; leaflets toothed or pinnatifid. Inflorescence a dense, many-flowered, globose or cylindrical spike. Flowers small, perfect or monoecious, 4-merous, in axils of 2–3 small bracteoles. Hypanthium urn-shaped, contracted at the mouth, angled, somewhat winged. Sepals petaloid, white or coloured, often purplish. Petals lacking. Stamens 2, 4, or many. Carpels 1 or 2; style terminal; stigma fimbriate-lobed. Fruit an achene enclosed within the hypanthium.

A small genus of about two dozen species of the temperate, alpine, and subarctic regions of the Northern Hemisphere.

1. Leaflets pinnatifid; annual or biennial; stems very leafy; stamens usually 2 ..... *S. occidentalis*

1. Leaflets coarsely toothed; perennial; stems sparsely leafy; stamens 4 or numerous.

   2. Stamens numerous; leaflets usually less than 2 cm long; flowers mostly monoecious; hypanthium in fruit strongly reticulate between the wings ..... *S. minor*

   2. Stamens 4; leaflets mostly over 2 cm long; flowers perfect; fruiting hypanthium smooth or merely wrinkled between the wings.

      3. Stamens 2–3 times as long as the sepals, filaments flattened, dilated toward the top.

         Sepals white or greenish, sometimes pinkish at the apex; inflorescence at first tapering but cylindrical in full anthesis ..... *S. sitchensis*

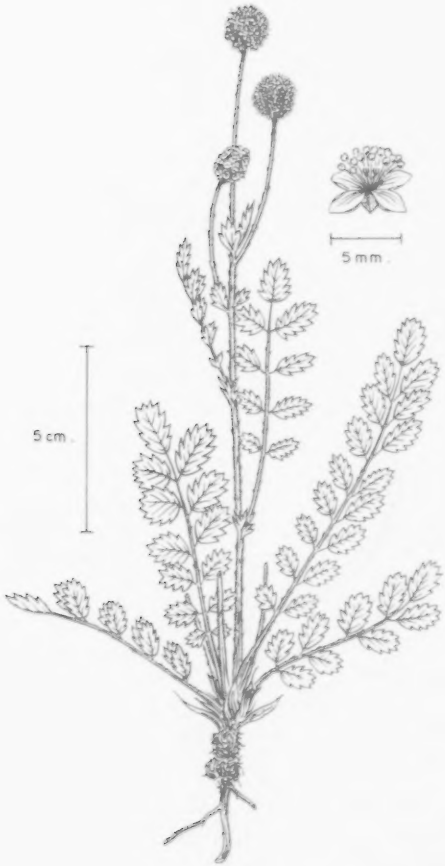
         Sepals purple or brownish, never pale; inflorescence not tapered upwards, obtuse, oblong or globose ..... *S. menziesii*

      3. Stamens usually included, but may be slightly longer than the sepals, filaments terete, not at all clavate ..... *S. officinalis*

Sanguisorba menziesii Rydb.

1. *Sanguisorba menziesii* Rydb.—Very similar to *S. officinalis* and perhaps a hybrid between that species and *S. sitchensis*. It differs from the former in its exserted stamens and from the latter in its purple sepals and oblong or globose spikes. It occurs sporadically and rarely where the two species grow together.

2. *Sanguisorba minor* Scop.—Perennial from a branched, caudex-like rhizome. Stem up to 10 dm tall, sparsely pilose. Leaves numerous, the basal more or less rosulate; leaflets 7–17, ovate-rotund, sharply serrate with few teeth; stipules adnate on lower leaves, free and leaf-like above. Flowering heads short-ovoid to globose on long peduncles. Flowers subtended by ovate, ciliate bracts, the lower flowers staminate, the upper pistillate or perfect. Sepals greenish-rose, ovate, the outer narrowly, the inner broadly



Sanguisorba minor Scop.

so. Stamens 12 or more, filaments thread-like, long-exserted, drooping. Carpels 2. Fruiting hypanthium very rough-warty between the wing-like ridges.

Roadsides and waste places; Eurasia. Locally established as a weed at Parksville and Saturna Island.

3. *Sanguisorba occidentalis* Nutt.—Glabrous annual or biennial herb, usually with a well-developed taproot. Stems up to 8 dm tall, branched and leafy. Leaves glabrous, odd-pinnate; leaflets about 17; pectinately cut into narrow, linear, acute lobes, strongly ascending; stipules of lower leaves entire, lanceolate, those of the stem leaves foliaceous, pectinately cut into linear segments. Flowering heads globose to oblong-cylindric. Flowers perfect; bractlets ovate-apiculate, green on the midvein, margins broadly white-scarious, about as long as the hypanthium. Sepals ovate-triangular, similar to the bractlets but rather longer than the hypanthium. Stamens usually 2, filaments thread-like, more or less included.

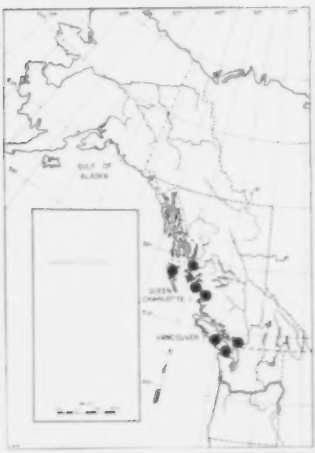
Sanguisorba occidentalis Nutt.

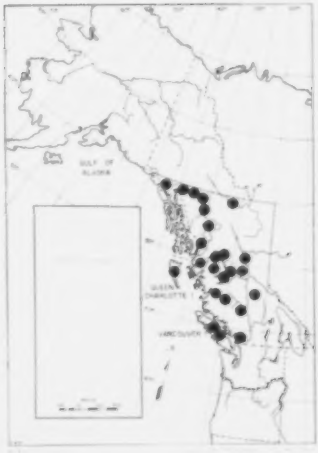
Fruiting hypanthium with thick, narrow wings, reticulate on the faces (*S. annua* of some authors, not Nutt.).

Dry, grassy places; southern British Columbia to southern California, east to Idaho and Montana. Very local in the extreme southern part of the Province.

4. *Sanguisorba officinalis* L.—Glabrous perennial with a stoutish, more or less horizontal rootstock. Stem up to 1.5 m tall, branched above. Leaves mainly basal; stipules membranous, adnate; leaflets from ovate below to lanceolate above, serrate with triangular teeth, firm, truncate, rounded or cordate at base, green above, paler beneath; stem leaves 1–2, much reduced, stipules more or less leaflike. Inflorescence ovoid to cylindrical; bracteoles membranous, purplish, more or less ciliate, lanceolate to lance-ovate, slightly longer than the calyx tube. Sepal lobes dark purple, ovate to lance-ovate, somewhat pubescent, particularly below, about 2.5

Sanguisorba officinalis L.



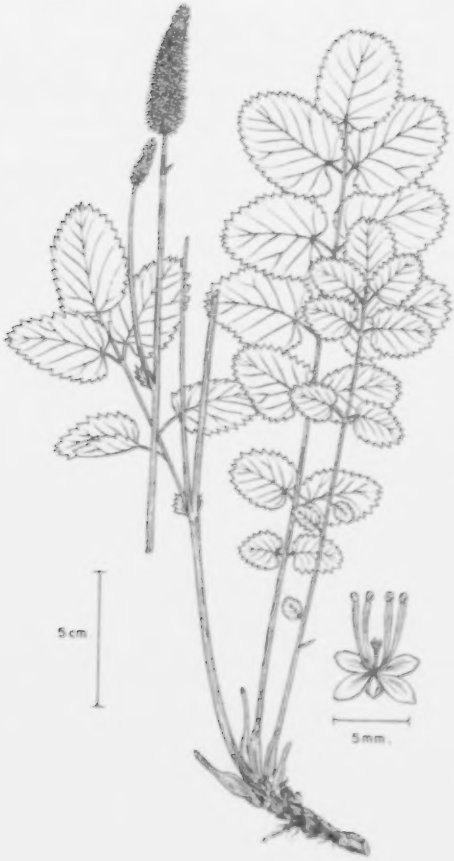


mm long. Stamens 4; filaments thickened, about the same length as the calyx lobes. Fruiting calyx pubescent, narrowly winged on the angles (*S. microcephala* Presl).

Muskeg and swamps; Eurasia, Alaska, Yukon, south to northern California. Fairly common in our coastal areas.

5. *Sanguisorba sitchensis* C. A. Meyer—Glabrous perennial. Rootstock stout, more or less horizontal. Stems sometimes branched above, up to 1.2 m tall. Leaves mostly basal; leaflets oblong-ovate, cordate, rounded at apex, coarsely triangular-serrate; stipules of basal leaves conspicuous, membranous, adnate, those of the upper leaves much reduced, leaflike. Inflorescence tapering to cylindric in full anthesis; bracteoles brownish, ciliate, lanceolate, slightly longer than the calyx-tube. Calyx lobes oval, about 2.5 mm long, white to purplish at tip, essentially glabrous. Stamens 4; filaments much longer than the calyx lobes, somewhat dilated above. Fruiting calyx glabrous, slightly winged on the angles.

Swamps, particularly in montane regions; Alaska to Oregon. Widespread in British Columbia.



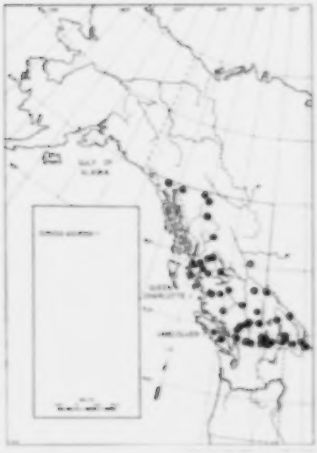
Sanguisorba sitchensis C. A. Mey.

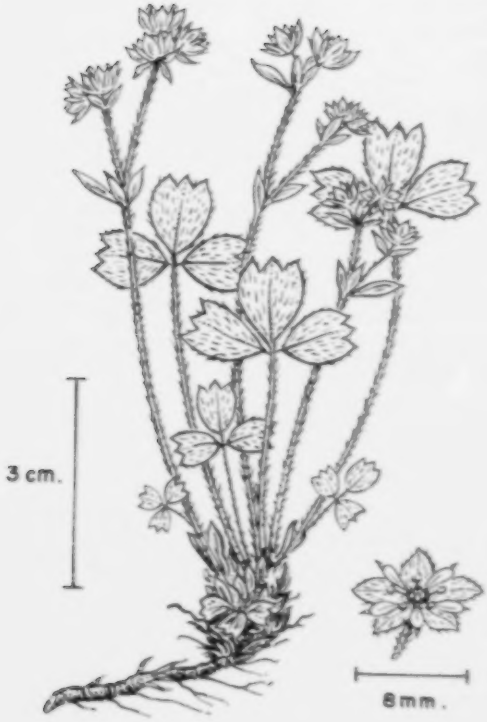
SIBBALDIA L.

Low tufted, perennial herb. Rootstocks short, caespitose. Leaves ternate. Hypanthium small, saucer-shaped, lined with glands. Flowers 5-merous, in axillary cymes. Epicalyx present. Petals yellow, obovate, cuneate or oblanceolate, equalling or shorter than the sepals. Filaments filiform, short, inclined. Carpels 5–20; styles lateral. Fruit an achene.

About 8 species, all except 1 limited to the higher mountains of Asia.

***Sibbaldia procumbens* L.**—Mat forming, perennial herb with stiff, appressed hairs. Stems prostrate, somewhat woody, much branched, branches ending in rosette of leaves. Flowering stem leafless, axillary, often shorter than the leaves. Leaves ternate, stalked, mostly from horizontal stems; leaflets obovate, wedge-shaped, apex truncate, 3- to 5-toothed, often purplish tinged beneath, sparsely pubescent on both surfaces; stipules adnate, free portion ovate-lanceolate, entire. Flowers few, in rather dense cymes. Epicalyx segments linear-lanceolate, shorter than the sepals. Sepals oblong-lanceolate, acute, often purple tinged. Petals





Sibbaldia procumbens L.

yellow, oblong or oval, small, about half as long as the sepals, inconspicuous or lacking. Hypanthium pubescent within. Carpels 5–10; style basal. Achenes brownish, ovoid to obovoid, with a flattened hirsutulous stipe.

Alpine meadows, open rocky slopes and ledges; circumpolar, south in North America to Quebec, New Hampshire, Colorado, Utah, and California. At comparatively high altitudes throughout the Province.

SORBUS L.

Deciduous trees or shrubs. Leaves pinnate or lobed or toothed, stipulate. Inflorescence a compound corymb. Flowers perfect. Calyx lobes more or less triangular, persistent. Petals white or pink in a few species, ovate to elliptic, short-clawed. Stamens 15–25, usually shorter than the petals. Carpels 2–5, coherent below; ovary compound, about half inferior; styles free. Fruit a small pome.

About 75 species of the North Temperate and subarctic regions, many are planted as ornamentals.

JONES, G. N. A synopsis of the North America species of *Sorbus*. Journ. Arn. Arb. **20**:1–43. 1939.

Trees over 5 m tall; leaves usually with more than 13 leaflets; winter buds densely grey-villous; inflorescence at anthesis greyish-lanate; styles 2–3 ..... *S. aucuparia*

Shrubs less than 5 m tall; leaflets rarely as many as 13; winter buds otherwise; styles 3–5.

Winter buds rather markedly reddish-brown pubescent, young growth and inflorescence less so; calyx glabrous outside as a rule; leaflets mostly tending to be obtuse or rounded at the tip, mostly serrate for not more than three-quarters of their length, usually one-third to one-half, as broad as long; styles 4–5; fruit red, glaucous ..... *S. sitchensis*

Winter buds glutinous, sparsely white hairy, young growth and inflorescence often quite densely pubescent; calyx mostly somewhat hairy outside; leaflets tending to be acute or acuminate, serrate for most of their length, usually less than one-third as broad as long; styles 3–4; fruit more orange, not glaucous ..... *S. scopulina*

1. *Sorbus aucuparia* L.—Tree to 15 m with narrow crown and ascending branches. Bark greyish, smooth. Twigs pubescent when young, later glabrate. Winter buds lanate to greyish-white

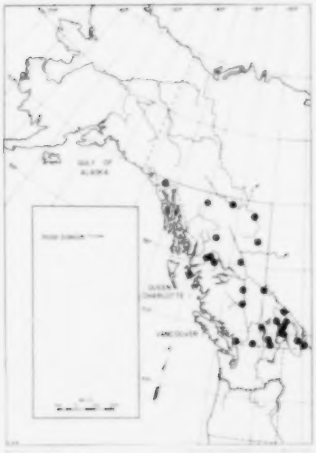
Sorbus aucuparia L..

pubescent. Leaves pinnate; leaflets 13–15, oblong, acute or subacute, sharply serrate almost to the rounded base, dark green and glabrous above, paler and becoming subglabrous beneath; stipules lanceolate, more or less persistent. Inflorescence compact, woolly pubescent in anthesis. Calyx hairy. Petals white, oval, about 3.5 mm long. Stamens about equalling the petals. Styles 2–3. Fruit up to 9 mm in diameter, scarlet.

Garden escape, usually found not far from habitations; native of Europe.

2. *Sorbus scopulina* Greene—Shrubs to 5 m tall, often forming clumps. Winter buds glutinous, glabrous to sparsely grey strigillose. Young growth sparsely to densely grey strigillose. Leaves with 9–13 leaflets; rachis and petioles sparsely pubescent to glabrate; leaflets glabrous, oblong-lanceolate, usually less than one-third as broad as long, cuneate-acuate at base, commonly short acuminate at tip, finely and sharply serrate almost the entire length. Corymbs more or less flat-topped with up to 200 flowers, sparsely

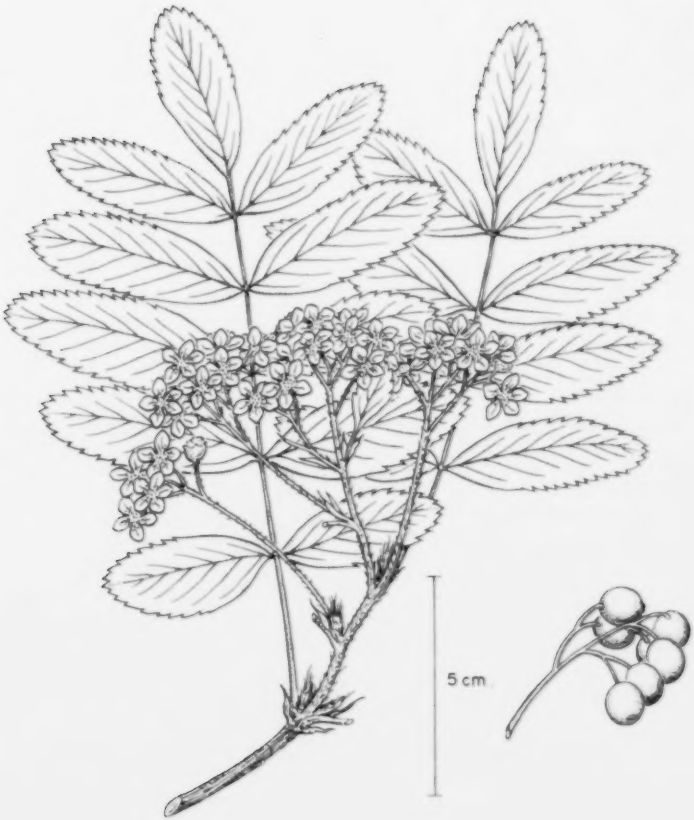
Sorbus scopulina Greene.



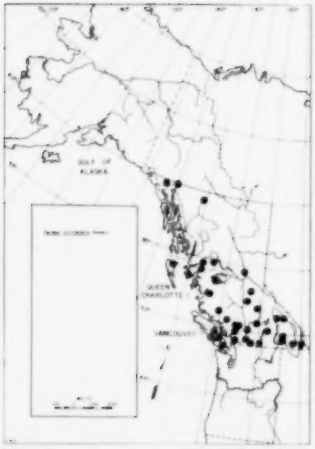
to densely white pubescent. Calyx mostly white pubescent outside. Petals oval, about 5 mm long. Styles 3–4. Fruit about 9 mm in diameter, orange to scarlet, not glaucous (*S. cascadensis* Jones).

Low montane to alpine regions; Alaska to northern California, east to western Alberta, Dakotas, Wyoming, Colorado, and New Mexico. Throughout British Columbia, but apparently less common on Vancouver Island.

3. *Sorbus sitchensis* Roemer—Shrub to 4 m with several erect stems. Winter buds and young growth rufous-villous often densely so, twigs later becoming somewhat glabrate. Leaflets 7–11, glabrous above frequently rufous pubescent on midribs below, oblong to oblong-ovate, one-third to nearly one-half as broad as long, mostly obtuse and rounded at the top, broadly cuneate below, coarsely serrate for not more than three-quarters their length, often much less so. Corymbs rounded, flowers not more than 80. Calyx glabrous without. Petals rhombic-oval about 5 mm long. Fruit red, glaucous, somewhat ellipsoidal, about 1 cm long.



Sorbus sitchensis Roemer.



Montane but not as a rule alpine; Alaska and Yukon, south to northern California, east to southwestern Alberta, northern Idaho, and northwestern Montana. Common throughout the Province at low to mid-altitudes.

SPIRÆA L.

Deciduous shrubs. Leaves estipulate, simple, usually serrate. Inflorescence corymbose or paniculate. Flowers perfect. Hypanthium more or less campanulate. Sepals persistent, lobes erect or reflexed. Petals 5, white, pink, or dark rose. Stamens numerous, filaments long and slender. Carpels usually 5. Fruit a follicle.

A genus of about 70 species of North Temperate regions, a number are cultivated.

1. Inflorescence flat, corymbose.
   2. Flowers white.
      Young growth and hypanthium crisp pubescent; sepals reflexed ..... *S. beauverdiana*
      Young growth and hypanthium glabrous; sepals not reflexed ..... *S. betulifolia*
   2. Flowers and filaments pinkish ..... *S. densiflora*

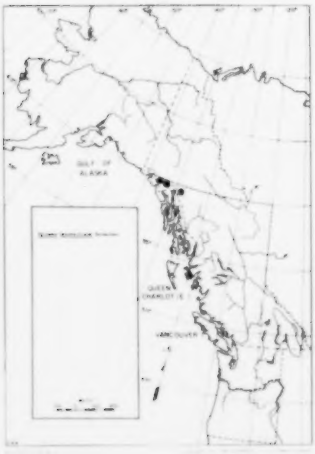
1. Inflorescence paniculate, rounded or more or less elongated.

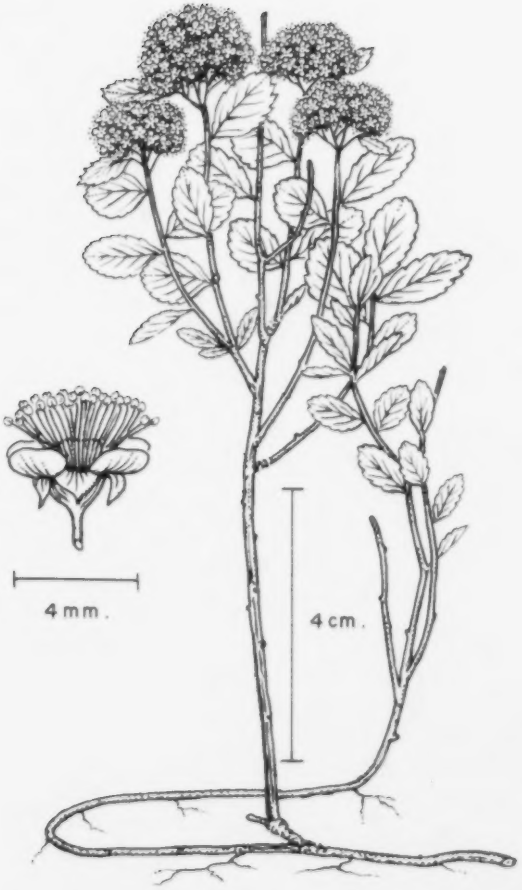
   Inflorescence obconic or rounded, about twice as long as broad; petals white or very pale pink ..... *S. pyramidata*

   Inflorescence much elongated, several times longer than broad; petals dark pink ..... *S. douglasii*

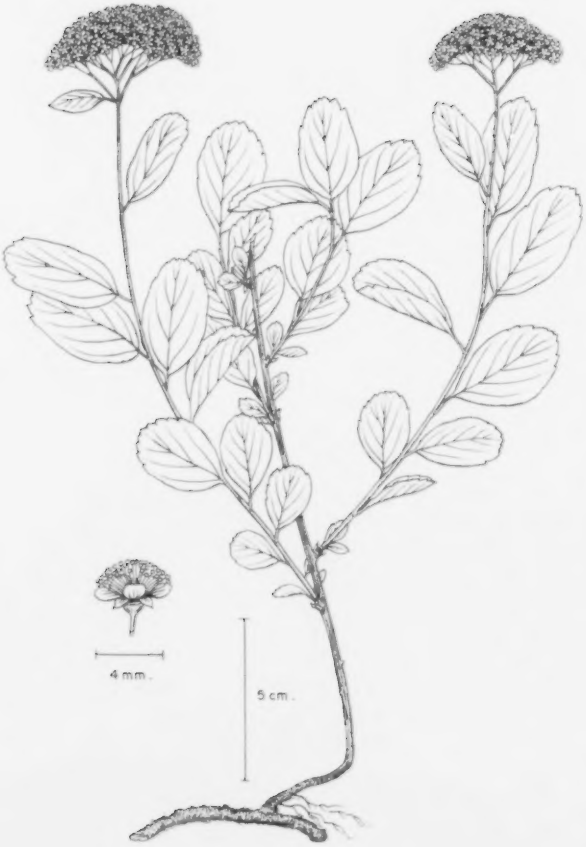
1. *Spiræa beauverdiana* Schneider—Low, much-branched shrub. Bark brownish purple. Young growth with crisp, incurved pubescence. Leaves ovate to alliptic-oblong, rounded at both ends, up to 4 cm long by 2 cm wide, shallowly serrate for most of their length, glabrous above, minutely pubescent below. Inflorescence subcapitate, corymbose. Flowers numerous, small, 5 mm or less across. Sepals deltoid, persistent, eventually reflexed, puberulent on the outside. Petals white, suborbicular, about twice as long as the sepals. Stamens numerous, filaments 2–3 times as long as the petals. Follicles about 2 mm long, minutely pubescent.

Muskeg; Alaska, Yukon, Mackenzie District, Northwest Territories, and extreme northwestern British Columbia. Known only from the Haines region in the Province.



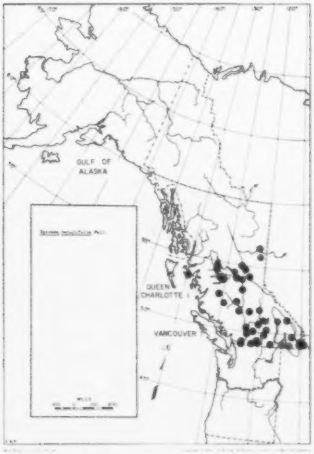


Spiræa beauverdiana Schneider.



Spiræa betulifolia **Pall.**

2. *Spiræa betulifolia* Pall.—Low shrub with long, creeping rootstock. Stems simple, erect, glabrous, up to 9 dm tall. Leaves short petioled, obovate to oval, glabrous, shining above, paler beneath, coarsely serrate or serrate or lobed, usually above the middle. Corymbs broad, flat-topped, glabrous. Hypanthium glabrous. Sepals about 1 mm long. Petals white or rose tinged, orbicular, about twice as long as the sepals. Filaments exserted. Follicles shiny, about 2.5 mm long, glabrous on the valves but sometimes ciliolate along the suture (*S. lucida* Dougl.).

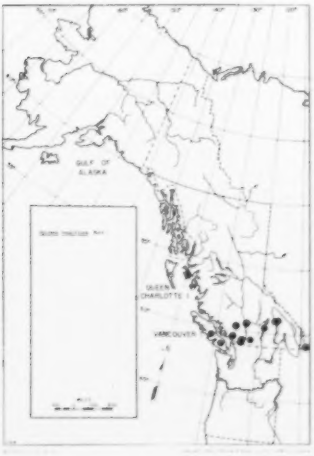


Open woods, slopes, etc.; British Columbia to Oregon, east to Alberta, South Dakota, Montana, and Wyoming. General on the Mainland south from about Lat. 55°N.

3. *Spiræa densiflora* Nutt.—Low, freely branched shrub to 7 dm; glabrous throughout or the leaves ciliate. Leaves oval to elliptic, rounded at apex and base, crenate or coarsely serrate above the middle dark green above, paler and prominently veined beneath. Inflorescence round to flat-topped. Hypanthium glabrous without, pubescent within. Sepals triangular ovate, somewhat obtuse, shorter

Spiræa densiflora **Nutt.**

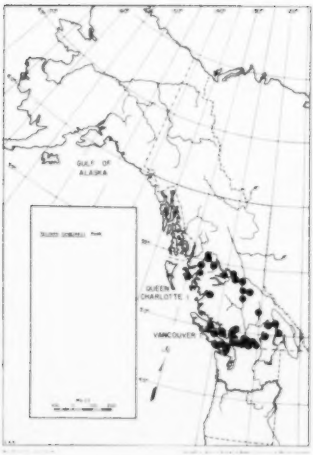
than the petals, erect or spreading, not reflexed. Petals rosy pink, about 1.5 mm long, narrowly obovate. Filaments pink, longer than the petals. Follicles about 4 mm long, oblanceolate, glabrous on the valves, shiny.



General in montane areas; southern British Columbia to California, east to Idaho, Montana, and eastern Oregon. Apparently limited to the Mainland of extreme southern British Columbia.

4. ***Spiræa douglasii Hook.***—Erect, much-branched shrub to 2 m; young growth usually somewhat woolly, later becoming glabrate. Leaves oblong to obovate, rounded or cuneate at base, serrate above the middle, glabrous or slightly puberulent above, mostly densely white tomentose below (or glabrous in eastern British Columbia). Inflorescence elongated, narrow, compact, often densely tomentose. Hypanthium tomentose to sparsely villous pubescent. Calyx lobes triangular, shorter than the petals, reflexed. Petals pale to deep rose, suborbicular, about 1.5 mm long. Filaments

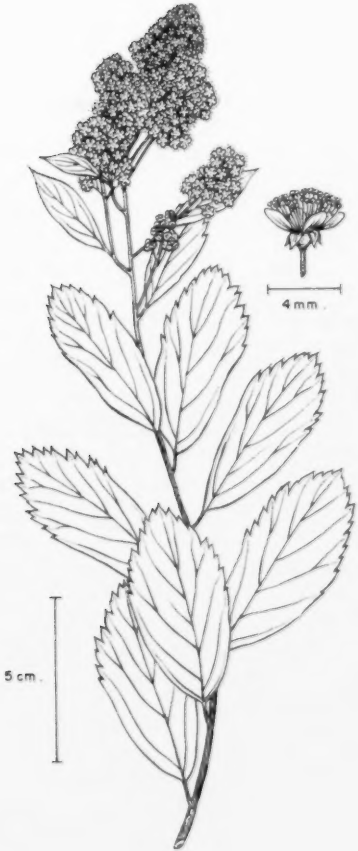
Spiræa douglasii **Hook.**



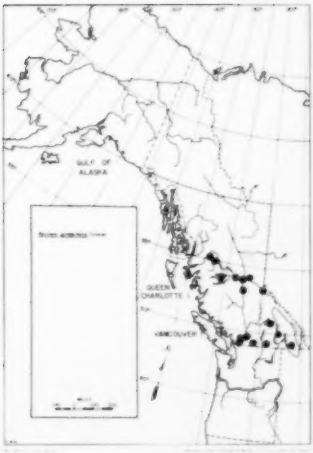
pink. Follicles shiny, about 3 mm long, glabrous, oblanceolate (*S. menziesii* Hook.).

Wet places at edge of lakes and streams; southern Alaska to northern California, east to southeastern British Columbia, Idaho, and north central Oregon. General along the Coast and in the Interior south from about Lat. 56°.

5. *Spiræa pyramidata* Greene—Spreading to erect shrub, usually with extensive rhizome, more or less finely pubescent throughout, particularly in the inflorescence. Leaves oblong-lanceolate to ovate-lanceolate, sometimes oblong-elliptic, from more or less entire to coarsely lobed to serrate, mostly above the middle. Inflorescence paniculate, obconic to rounded, about twice as long as broad. Calyx somewhat pubescent without, lobes reflexed, about half as long as the petals and about equalling the hypanthium. Petals white to pinkish, especially when young. Follicles about 3 mm long, finely pubescent as a rule.



Spiræa pyramidata Greene.



Variety of sites from wet to dry, at low elevations; southern British Columbia to northern Oregon, east to central Idaho. From about Lat. 55°N., mostly east of the Coast Mountains.

GLOSSARY

Accrescent—Enlarging with age.

Achene—Small, dry, indehiscent, one-seeded fruit.

Actinomorphic—With radial symmetry (as a star).

Acuminate—Tapering to a prolonged point.

Acute—Distinctly and sharply pointed, but not drawn out.

Adnate—Having one organ wholly or in part attached to a different organ; fusion of unlike parts.

Alternate—Any arrangement of leaves or other parts not opposite or whorled; placed singly at different heights on the axis or stem.

Aneuploid—Having fewer or more chromosomes than an exact multiple of the haploid (n) number.

Anthesis—The act of a flower opening.

Apomyxis—A reproductive process without fertilization in plants.
Appressed—Lying flat against an organ.
Articulated—Jointed, provided with places where separation may naturally take place.
Ascending—Rising up; produced somewhat obliquely or indirectly upward.
Attenuate—Long tapering, acuminate.
Awn—Bristle-like appendage.
Axil—The upper angle formed between the axis and any organ that arises from it.
Axillary—Situated in the axil.
Axis—The main or central line of development of any plant or organ; the main stem.
Biserrate—Doubly serrate.
Bract—A modified leaf subtending a flower or belonging to an inflorescence.
Bracteole—A bractlet or small bract.
Caducous—Dropping easily.
Caespitose—Matted; growing in tufts; in small dense clumps.
Calyx—The outermost whorl of floral parts, made up of sepals.
Campanulate—Bell-shaped.
Canescent—Becoming hoary, usually with a grey pubescence.
Carpel—A simple pistil; one unit of a compound pistil.
Caudate—With a tail or tail-like appendage.
Caudex—The woody base of a perennial plant.
Cauline—Pertaining to or belonging to the stem.
Ciliate—Said of a margin fringed with hairs.
Ciliolate—Said of a margin fringed with small hairs.
Clavate—Club-shaped, said of a long body thickened at one end.
Concolorous—Of the same colour.
Connate—United congenitally or subsequently.
Connivent—Coming together or converging but not organically connected.
Convergent—Applied to veins which run from the base to the apex of a leaf in a curved manner.
Cordate—Heart-shaped, as of leaves with petioles at the broader notched end.

Coriaceous—Leather-like.

Corymb—A short and broad, more or less indeterminate flower cluster, the outer flowers opening first.

Corymbiform—Shaped like a corymb.

Corymbose—Arranged in corymbs.

Crenate—Said of a margin with rounded or blunt teeth.

Cuneate—Wedge-shaped; triangular, with the narrow end at the point of attachment, as of leaves and petals.

Cyme—A broad, more or less flat-topped, determinate flower-cluster, with the central flowers maturing first.

Deciduous—Not persistent, said of floral parts falling after anthesis.

Decumbent—Reclining or lying on the ground, but with the ends ascending.

Decurrent—Extending down adnate to the stem.

Dehiscence—The method or process of opening of a seed pod or an anther.

Deltoid—Broadly triangular.

Dentate—Said of a margin with sharp teeth pointing outward.

Denticulate—Minutely or finely dentate.

Depressed—More or less flattened from above; pressed down.

Determinate—Said of an inflorescence in which the terminal flower blooms slightly ahead of those arising below.

Dichotomous—Branching by constantly forking in pairs.

Didymous—Found in pairs; divided into two lobes.

Digitate—Finger-like; compound with the members arising from one point, as the leaflets of the horse chestnut.

Dilated—Expanded or flattened.

Dioecious—Unisexual, the male and female flowers in different plants.

Divergent—Inclining away from each other.

Dorsal—Relating to or attached to the back.

Drupe—Fleshy one-seeded indehiscent fruit, with the seed enclosed in a strong pit or stone.

Drupelet—One drupe in a fruit made up of aggregate drupes, as in the raspberry.

E—In Latin-formed words usually denoting, as a prefix, that parts are missing: eglandular, without glands.

Ellipsoid—An elliptic solid.
Elliptic—Oval in outline, narrowed to the rounded ends and widest at or about the middle.
Emarginate—With a shallow notch at the apex.
Endocarp—The inner layer of a pericarp.
Epicalyx—A series of bracts close to and resembling the calyx.
Erose—Irregularly toothed or eroded as though bitten or gnawed.
Exfoliating—Coming off in thin layers, as bark.
Exserted—Sticking out; projecting beyond, as stamens from a perianth.
Extrorse—Facing or opening outward.
Filament—The part of the stamen that supports the anther.
Filiform—Threadlike, long and very slender.
Fimbriate—Fringed, the hairs longer or coarser as compared with ciliate.
Flabellate—Fan-shaped, dilated in a wedge-shape.
Flexuous—Bent alternately in different directions.
Floriferous—Flower-bearing.
Foliaceous—Leaflike.
Foliolate—Having leaflets.
Follicle—Dry fruit from a single carpel that dehisces along one side only.
Fugacious—Soon falling or fading; not permanent.
Fusiform—Spindle-shaped; narrowed both ways from a swollen middle.
Geniculate—Abruptly bent so as to resemble the knee-joint.
Glabrate—Nearly glabrous, or becoming glabrous with maturity or age.
Glabrescent—Used of a surface that is hairy when young but smooth when mature.
Glabrous—Smooth, devoid of pubescence or hair of whatsoever form.
Glaucous—Covered with a bloom or whitish substance that rubs off.
Glutinous—Covered with a sticky exudate.
Hirsute—With stiff or bristly hairs.
Hirsutulous—Slightly hirsute.
Hispid—Beset with rough hairs or bristles.

Hygroscopic—Altering form or position through changes in humidity.

Hypanthium—An enlargement or development of the torus under the calyx.

Incised—Cut sharply and irregularly, more or less deeply.

Indeterminate—Said of an inflorescence in which the flowers open progressively from the base upward, or from the outside inward.

Inferior ovary—With perianth located on top.

Inflorescence—Mode of flower-bearing, in some cases a flower cluster.

Infra—In combinations, signifying below.

Inserted—Attached to or growing out of.

Laciniate—Cut into lobes separated by deep, narrow, irregular cuts.

Lanate—Clothed with woolly and interwoven hairs.

Lanceolate—Lance-shaped, rather narrow, tapering to both ends with the broadest part below the middle.

Linear—Long and narrow with margins parallel, or nearly so.

Lobulate—Divided into small lobes.

Lyrate—Lyre-shaped, pinnatifid with the terminal lobe large and rounded, the lower lobes small.

Marcescent—Withering without falling off.

Merous—Referring to the number of parts; as flowers 5-merous in which the parts of each series are 5 or in 5's.

Mesocarp—The middle layer of a pericarp.

Monoecious—Having unisexual flowers, with those of both sexes borne on the same plant.

Nectariferous—Nectar-bearing.

Ob—Latin prefix, usually signifying inversion, as obconical, inversely conical, i.e., a cone attached at the small point.

Oblong—Longer than broad with the margins nearly parallel.

Obtuse—Blunt or rounded at the end.

Opposite—On both sides at the same level, as two leaves at a node.

Orbicular—Flat with a circular outline.

Ovate—Shaped like a longitudinal section of a hen's egg, the broader end basal.

Palmate—Resembling a hand with the fingers spread; having lobes radiating from a common point.

Panicle—A compond raceme.
Papilla—A minute, nipple-shaped projection.
Papillose—Bearing papillæ.
Pectinate—Comb-like; beset with narrow, closely inserted segments like the teeth of a comb.
Pedately—Palmately divided or parted with the lateral divisions cleft.
Pedicel—The stalk supporting a single flower.
Peduncle—Primary flower stalk supporting either a cluster or a single flower.
Perfect—Said of flowers with both stamens and carpels present and functioning.
Pericarp—The wall of a mature ovary.
Petiole—The stem of a leaf.
Petiolulate—Having a petiole.
Pilose—With soft hairs.
Pinnatifid—Cleft in a pinnate manner.
Pinnate—Feather-like as with the leaflets of a compound leaf developed on both sides of the rachis.
Pistil—Female organ of a flower, consisting when complete of an ovary, style, and stigma.
Polygamo-dioecious—Bearing some perfect flowers but mostly with male and female flowers on separate plants.
Polyploidy—With a reduplication of the haploid chromosome number, as triploid, tetraploid, etc.
Pome—Fleshy fruit, the product of a compound pistil as in the apple.
Pruinose—With a waxy powdery secretion on the surface; glaucous.
Puberulent—Somewhat or minutely pubescent.
Pubescence—Hairiness.
Pubescent—Covered with short, soft hairs, or down.
Punctate—Marked with dots, depressions, or translucent glands.
Punctiform—Have a dot-like appearance.
Pustular—Having slight blister-like elevations.
Pyriform—Pear-shaped.
Raceme—An indeterminate inflorescence consisting of a central axis bearing a number of flowers with pedicels of nearly equal length.

Racemiform—In the form of a raceme.
Rachis—An axis bearing flowers or leaflets.
Radical—Belonging or pertaining to the root.
Receptacle—The expanded portion of the axis which bears the floral parts.
Reflexed—Abruptly curved or bent downward or backward.
Regular—Of a flower radially symmetrical.
Reniform—Kidney-shaped, said of the form of some leaves.
Repand—Undulate or wavy, as the margin of some leaves.
Reticulate—Forming a network.
Retuse—With a shallow notch at the rounded apex.
Revolute—Rolled backward, margin rolled toward the lower side.
Rhizomatous—Producing or possessing rhizomes.
Rhizome—The rootstock, a subterranean stem.
Rhombic—Oval but angular on the sides; lozenge or diamond-shape.
Rootstock—Subterranean stem; rhizome.
Rosulate—In the form of a rosette.
Rotund—Rounded in outline, somewhat orbicular, but a little inclined toward the oblong.
Rufous—Reddish-brown.
Rugose—Wrinkled, as a leaf surface with sunken veins.
Scape—Leafless peduncle arising from the ground, it may bear scales or bracts but not foliage leaves and may be one- or many-flowered.
Scarious—Thin, dry, and membranous, not green.
Sericeous—Silky, clothed with closely appressed, soft, straight pubescence.
Serrate—With sharp teeth on the margin pointing forward.
Sessile—Without a stalk of any kind, as a leaf without a petiole.
Setose—Bristly.
Sinus—The space between two lobes of a leaf or other expanded organ.
Spathulate—Spatula-shaped.
Spike—An inflorescence consisting of a central axis bearing a number of sessile flowers.
Stellate—Star-shaped or radiating like the points of a star.

Stigma—The part of the pistil or style which is receptive to pollen.

Stipe—The stalk of a pistil or other small organ.

Stipitate—With a stipe.

Stipule—A paired outgrowth at the base of a leaf.

Stolon—A sucker, runner, or any basal branch which is disposed to root.

Stoloniferous—With stolons or runners that take root.

Strigillose—Minutely strigose.

Strigose—Beset with sharp-pointed, appressed straight and stiff hairs or bristles; hispid.

Style—The more or less elongated part of the pistil between the ovary and the stigma.

Sub—As a prefix, usually signifying somewhat, slightly, or rather.

Subtend—To stand below and close to, as a bract below a flower.

Subulate—Awl-shaped.

Suffruticose—Pertaining to a low and somewhat woody plant; woody at the base.

Superior ovary—With perianth arising from below it.

Suture—A junction or seam of union; a line or opening or dehiscence.

Terete—Circular in cross-section.

Ternate—In threes.

Thyrse—A compact and more or less compound panicle.

Thyrsoid—Resembling a thyrse.

Tomentose—Densely woolly or pubescent, with matted, soft, wool-like hairiness.

Tomentulose—Somewhat or delicately tomentose.

Truncate—Ending abruptly, the base or apex nearly or quite straight across.

Turbinate—Top-shaped.

Umbel—An indeterminate inflorescence consisting of several pedicillate flowers having a common point of attachment.

Umbellate—With umbels; pertaining to umbels.

Undulate—Wavy, repand.

Urceolate—Pitcher-like, hollow and contracted at the mouth like an urn or pitcher.

Valvate—Said of parts of a flower bud that meet without overlapping.
Verrucose—Covered with wart-like elevations.
Villous—With long, silky, straight hairs.
Viscid—Sticky.

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